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# California State Journal of Medicine

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(SEE PAGE XI)

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VOL. XV

JULY, 1917

No. 7

### AMERICAN REMEDIES FOR CHINESE AILMENTS.

Under this caption we published, in the last issue, a press notice which issued from the Bureau of Foreign and Domestic Commerce of the Department of Commerce in Washington. If you didn't read it last month, read it now. We published it without comment in order to see if anyone would object to its propaganda. One man did. But perhaps no one reads the editorials. It is well to do so; every now and then they contain something worth while, contributed by someone outside this office. But to return to our mutttons. How can a government which devotes so much time and money to the scientific care of hogs and sheep and chickens and cows and grapes and pears, publish such arrant rubbish as this:

Through judicious and persistent advertising the natives are gradually being educated to the necessity of paying some intelligent attention to their ailments and are responding remarkably well. For this reason it is not difficult to introduce a good article at a reasonable price, if supported by the right kind of advertising.

Isn't it funny how different is the standard of intelligence in the Department of Agriculture, for instance, and in the Department of Commerce? We wonder why.

### DRUGGISTS' COMMISSIONS.

There have already developed interesting features as a result of our editorial, "There Be Land Rats and Water Rats," attacking, in the last issue,

the exchange of commissions between the physician and the bandagist. We have been assured by certain druggists that the giving of commissions to physicians in return for prescription business is greatly on the wane, but still exists, and that the druggists see no way out. They are ashamed of this phase of their business and would like to see it abolished, but evidently they are so poorly organized that they can not hang together and put through a reform of this sort. But the druggists are not the only culprits. There are, and we say, it regretfully, those among our own ranks who not only accept commissions, but insist upon them; those who will go so far as flat-footedly to refuse to pay the druggist for materials purchased even though the items run into the hundreds of dollars, and have the effrontery to defy the man, to whom they are legally and morally indebted, to sue for the recovery of his claim; those who do not accept cash but keep their homes and offices supplied with drugs and toilet preparations for which they do not pay, and do not intend to pay. The druggist expects the man who sends him none or few prescriptions to pay for these things, but does not care whether the man whose prescription business is worth while pays or not. Most druggists claim that all druggists pay commissions on prescription business to some doctors, and that the loss which would ensue to any one of them as a result of an independent above-board declaration against the practice, would be ruinous.

On the heels of this statement, one pharmacy has done that very thing. It has a printed circular which it has mailed to many physicians, and which will be wrapped with each package, so that the patient may know what is going on. This circular reads, "Our institution is entirely individual and has no financial or pecuniary connection with any physician. If the doctor directs you to have your prescription work done by us, he does it solely for the reason that he knows we can be absolutely depended upon to dispense exactly what he orders. . . . All of which proves that he has your interest at heart."

That is the milk in the cocoanut.

### READ THIS—IT IS FOR YOUR BENEFIT!

You have had it drummed into you until you are sick of it, that to help the JOURNAL you must patronize its advertisers. Now we are asking your help to get advertisements. It is safe to say that of the members of the Society, not less than 2600 own automobiles, and that probably 80 per cent. of them represent not more than eight or ten makes of car. We think that it would be worth while for automobile dealers to advertise with us. In order to impress them we must be able to talk facts. We want a census of the automobiles owned by the members of this Society. Please fill out the coupon on page xxxvi of the back advertising section and mail it to this office at once. It takes but a minute to do it and it will help us and therefore yourself. Please do it now, before you forget.

### OUR LEGAL RECORDS AND THE INDEMNITY DEFENSE FUND.

The practice of medicine depends perhaps more than any other branch of scientific endeavor upon experiment and inductive reasoning. And yet it is very difficult to direct the attention of men of this type of mind to matters of intense personal interest to them. We refer to the records of our Legal Department.

These records of claim after claim and case after case against physicians, should engage the careful consideration of every member. They show conclusively, first, that neglect, carelessness, and lack of skill are not charged only against the younger men, the more inexperienced men, and the men who might not be termed the most learned or careful in any given line of work. But on the contrary, these records demonstrate that these claims are made and suits are brought with the greatest impartiality against the most experienced, the most skilful, and the most careful of those of whom the profession can boast.

Secondly, these files show that rapacity and ignorance refuse to recognize that man is mortal; that there are few specific remedies; in a word, that a physician is not a warrantor of cures nor a guarantor of diagnosis and treatment.

Thirdly, these documents record in unmistakable language that no matter how devoid of merit such a claim may be, no matter how outrageous or ridiculous its assumed basis in fact or theory, a very high degree of legal skill, a vast amount of work and vigilance is frequently necessary to protect the property, and preserve the name and reputation of an able, skilful and devoted member of the profession.

To meet this situation more adequately the Indemnity Defense Fund was instituted.

After months of labor, thought, and care, our Council and the Legal Department have worked out the rules and regulations governing the Fund. Copies of the Coverage Rules are being mailed to the members who have subscribed to it. The books of the Trustees have been opened, and the whole machinery of the plan is under way.

Subscriptions to the Fund are coming in. The Council has determined that until December 31, 1917, the amount shall remain the same, viz.: \$15 in cash and \$15 by note. We undertake to say that this is the best investment of \$30 that any member could make.

We do not advance this proposition merely because it is a Society undertaking. It is based on facts, upon our own legal records covering the past eight years, and upon the lively recollections we maintain of the anxiety and worry these attacks have brought upon our members. This conservative, carefully-worked-out plan of adding to our splendidly organized Legal Department, indemnity against possible adverse judgments should receive the earnest personal support of each member of the Society. The first step in that support is a subscription to the Fund.

Full details regarding the Fund are in the hands of the Secretary of your County Society. If you

have not already subscribed, can we say more to urge you to do so immediately? Your protection under the Fund commences with the day your subscription is received by the Secretary.

### INSURANCE AND THE INDEMNITY DEFENSE FUND.

When the Legal Defense Department was first instituted in 1909, no distinction was made as to the defense of members accused of malpractice, between members who were protected by corporate insurance and members who were not. In 1912 the constantly increasing cost of maintaining the Department caused the Council to adopt the rule that if a member were insured he must elect whether or not he desired the insurance company or the Society to undertake his defense. There has been a great deal of discussion and criticism of this rule. It was adopted solely for reasons of economy and because the Council felt that by doing so the greatest possible good would be extended to the greatest possible number in the organization. The rule has ever since remained in force, and for the same reasons, but if a member is insured and he does elect to have his insurance company protect him, the Society nevertheless is interested in every case and affords such general co-operation as it can. Where the circumstances are peculiar and special, the Council has in one or two instances authorized active participation by the Society's Legal Department as well.

It is perhaps hardly necessary to say that a member although insured, nevertheless strongly desires the active co-operation of the Society through its authorized representatives in his particular case. The Indemnity Defense Fund meets this situation by affording both legal defense by the Society and indemnity against a possible adverse judgment.

Our Legal Department does not advise any member who is otherwise insured to relinquish that insurance upon joining the Indemnity Defense Fund, but to retain that insurance and join the Indemnity Defense Fund as well. It should be borne in mind that while an accurate statement cannot be made in this regard, the Indemnity Defense Fund does not mean a regular annual assessment for its maintenance. We will later have space to say more upon this subject.

### MILITARY MEDICAL NEEDS.

There has been a great response to the initial calls for physicians in the Army and Navy Medical Corps, and the Medical Officers' Reserve Corps. And yet the need is so great that the real demand is still most inadequately met. The actual loss of medical officers in the armies of England and France has served to accentuate the urgent requirements of civil practice in those countries. Particularly in France the new public health problems incident to the war, such as the enormous problem of tuberculosis control and venereal prophylaxis, are demanding a new army of medical men who only in part have thus far been forthcoming. These new requisitions of physicians must be filled largely from the United States, and this



must be done in addition to supplying an adequate medical personnel for our own army and navy.

There was published in the last issue of the Journal, an appeal from Dr. J. Henry Barbat, president of the Medical Society of the State of California, for the enrollment with one of the medical services of every physician whose circumstances would at all permit. We repeat that appeal, not in view of a poor response from the physicians of California,—because the response has been already exceedingly gratifying,—but we repeat the appeal because of the enormous obligation and necessity resting on physicians by virtue of their very profession, and the crying demand for their present service on a war basis. It is again urged that each individual reader of this page consider most seriously within himself whether he cannot enroll in one of the military services.

Thus far there has been proportionately a much larger enrollment among the older physicians than among the younger. And yet no physician who has graduated within the last four years should content himself with other than the most substantial reasons against enrollment. In the military service, the younger officer has an immense advantage. If he enters the regular medical corps of army or navy, this advantage is peculiarly great as his order of seniority rises.

A feature which every physician should emphasize in his daily rounds is the need for enlisted men in the sanitary troops. The physician best of all can appeal to young men of his acquaintance to enlist for this service. It affords sure promise of action, valuable experience and training, and danger to inspire any man's best courage. Each and every physician in the state, whether enrolled, superannuated, incapacitated, active or whatnot, ought to inform himself thoroughly on medical military organization, and become an active campaigner for recruits for the enlisted Sanitary Service as well as for the Army and Navy Medical Corps, and the Medical Officers' Reserve Corps.

#### THE ALCOHOL QUESTION.

##### I. PHYSIOLOGICAL CONSIDERATIONS.

Comparatively little data of scientific value is available on the exact physiological action of alcohol. Its use as a medicine is rapidly disappearing, as its harmful by-effects are better understood. That it has a certain food value is known. But it is not a protein substitute or a tissue builder. It does afford direct energy on oxidation and may partly replace fats and carbo-hydrates to a limited degree. With this limited food value is to be remembered too its narcotic and toxic action, and its inclusion in the class of habit-forming drugs. Since its narcotic properties have been evaluated, it no longer ranks as a stimulant. Thus has there come a decided change in the scientific estimation of alcohol,—a change paralleled by an equally decided change in social estimation of it. For whereas society of but a few generations ago considered alcoholism rather a distinction, the converse has become a present fact.

1. (New York City Department of Health,

Monthly Bulletin, May, 1916.) According to the ergograph, alcohol reduces physical power by about 8%. Psychological tests show it to produce a mental efficiency loss of from 3 to 27%. Its direct production of disease, especially in the gastrointestinal tract, nervous system and mentality, is well known but perhaps represents a toxic action appearing only with excessive or long-continued use. With this should be noted its effect in increasing susceptibility to infectious diseases. A conservative estimation from careful data places about 10% of insanity at the door of alcohol. The 36,000 insane of New York state in 1915 cost \$6,200,000 for maintenance. Elimination of alcohol would therefore have saved \$620,000 to that state on this score alone.

Literature on the physiological action of alcohol is enormous but nearly all of it is invalidated from the scientific standpoint by lack of proper control and absence of personal bias and prejudice in the conductor. The alcohol program of the Carnegie nutrition laboratory furnishes one of the first attempts to get really reliable evidence of this action. Benedict summarizes the results so far obtained in the investigation of the effect of alcohol in moderate doses on psychological processes in man (Science, 1916, XLIII, 907). On normal subjects, alcohol increased the latent time of the patellar reflex about 10 per cent., and reduced the coincident muscle thickening by 46 per cent. The latent period of the protective lid reflex was increased 7 per cent., and the extent of the lid movement by 19 per cent. The latent period of speech reaction was increased 3 per cent. Memory and free association were but slightly affected.

The sensory threshold, as shown by sensitivity to faradic stimulation, was raised by 14 per cent. In motor co-ordination tests the number of finger movements in six seconds decreased by 9 per cent. and the velocity of the eye through an arc of 40 degrees was decreased by 11 per cent.

All of these experiments showed alcohol as a definite depressant, exerting least effect on the more highly organized processes of free association and memory. The pulse rate is constantly accelerated by inhibition of the cardio-inhibitory mechanism. "The higher senses alone show capacity for autogenic re-enforcement," and are most free from voluntary re-enforcement and control. They are the ones least affected by alcohol. Benedict warns against indiscriminate application of these results to industrial and other problems until the mass of carefully controlled experimental work is greater, and these results are confirmed.

It appears then that alcohol is useful as a drug and as a food in very limited and carefully controlled situations alone, and that its employment in either capacity is attended by serious risk of habit formation, and likewise by the necessary concomitants of its narcotic and destructive physiological action. Judgment of what constitutes a proper situation for its exhibition must therefore be influenced by consideration of whether the good to be achieved is worth the full price of the effect produced, whether the cure may not be worse than the disease. Furthermore its cost is a serious

objection to extensive use for its caloric value. The money that will buy 30 calories of sherry or 240 calories of beer, will pay for 2180 calories of bread or 3720 calories of oatmeal. There is to be counted too the pleasure of alcoholic beverages. Decision as to how far concomitant dangers should influence the use of alcohol for pleasure, is a matter of personal judgment.

So much for the credit balance. On the debit side is to be placed conclusive scientific data showing the narcotic action of alcohol and its interference with physical health and efficiency, mental health and efficiency, and industrial safety and efficiency. It is yet to be shown that as a rule alcohol as a beverage benefits its users physically, mentally or industrially and economically. It is self-evident that alcohol is not a physiological necessity. Its proved dangers and better understood physiological action make the seriousness of its use largely proportional to the amount used, with the important modification that few drugs have greater tendency to habit formation.

#### THE PROVOCATIVE WASSERMANN REACTION.

The value of the Wassermann test in *helping* make a diagnosis of syphilis is universally recognized; but the usefulness of the "provocative Wassermann" is not so well known. This latter procedure may be described as follows:

To a patient showing a negative Wassermann but still suspected of having a focus of the spirochetæ pallidæ in his system, a small intravenous injection (0.3 gramme) of salvarsan or neosalvarsan is given. If the organisms of lues are present, the spirocheticidal action of the drug will cause the liberation of substances which "provoke" the appearance of a positive Wassermann reaction. It is best to examine the blood *twenty-four hours* and again *forty-eight hours* after the injection, for the great majority of positive cases show the reaction within forty-eight hours. Very shortly in most cases the blood will become "negative" again. By this means a doubtful reaction (plus minus) may be converted into a triple or quadruple plus reaction. This test is valuable also in "latent" cases and in *helping* determine whether or not a patient is cured, and it may be of use in early cases where the physician cannot examine material from the ulcer with the dark field condenser. Of course the examination of serum from the sore with the dark field condenser is the most valuable means of making an early diagnosis, but in doubtful cases the "provocative Wassermann" may help.

The subject is fully discussed in the following articles:

Gennerich (Berl. klin. Woch. Sept. 19, 1910, No. 38; Milian (Paris Dermatol. Gessell. Dec. 1, 1910); C. F. Craig (Am. Journ. Med. Sci., 1914. Vol. 149, p. 53), and C. F. Craig (Am. Journ. of Syphilis. Jan., 1917, p. 205).

This procedure has been utilized in the Skin Clinic of the Stanford University Medical School

for several years and its value seems established; but it must not be forgotten that in the total absence of any supporting evidence, a single positive Wassermann is not sufficient to make a diagnosis of lues.

### Original Articles

#### A NON-SUTURE OCULAR TENDON SHORTENING WITH RESULTS OF FORTY OPERATIONS.\*

By RODERIC O'CONNOR, M. D., Oakland, Cal.

At first thought one is apt to jump to the conclusion that, like the countryman looking at a giraffe for the first time, "there ain't no sich thing" possible. However, the thing is so simple the wonder is that it was not thought of long ago.

The idea came to me one day, when I was shortening a saddle girth, that an ocular tendon could be shortened in exactly the same way by dividing it into several bands. *In this way a safe, and certain shortening, can be secured, without the constriction and cutting, that is a necessary part of every suture method.* It then becomes merely a question of sufficient experience upon which to base an estimate of the amount of shortening needed in any given case. This because a definite shortening of the inelastic tendon does not mean the same in the total muscle, due to the elasticity of the muscle tissue.

By using this principle the need for tenotomy is reduced to an absolute minimum. In this connection you will probably agree that tenotomy has been looked upon as a necessary evil, and done with few exceptions, only because of the uncertain results from advancements—at least in the hands of the average operator.

Figure 1 (a) shows the course of the rope in shortening all the strands of the girth; (b) shows the looping of the strands about the rope after it has been straightened. It is clear that the rope takes the constriction and therefore the shortening is permanent. I have used saddle girths, so shortened, for years. There can be, in my opinion, no argument against the principle. However, the possibility of the tendon bands straightening with loss in effect upon absorption of the catgut used as the shortener was considered and therefore I have never used this method.

I then began to figure on means to shorten, in a similar manner, a band on each margin of the tendon, wide enough to take the full action of the muscle, this shortening to relieve an advancement, tuck, or resection, of the remaining central portion, from all tension during the healing period. In this way, by the time the catgut is absorbed, the central tongue is firmly healed in position and able to take the muscle action. This, therefore, is the method I have used in all but two of my operations.

Figure 1 (c and d) show the first and second stages in the passing of the shortener; (e) shows the marginal bands shortened, and the evident re-

\* Read before the annual meeting of the California State Medical Society, Fresno, Cal., April 20th, 1916.

laxation of the central portion (f) which can be taken up the amount of its looseness and the means employed be under no tension. Inasmuch as a double loop is formed in this method, the shortening is far greater than in the first method.

My chief desire in working up this method is to avoid tenotomies especially of the interni and the results as shown in the following summary speak for themselves.

#### RESULTS.

*Shortenings of externi for concomitant esotropia and esophoria in degrees varying from 7 prism to 60 of arc—24.* In all but one of these the result desired was secured and no tenotomies of the interni done. The exception was on the second externus of the 60 degree case, and in this the tendon was shortened in three bands instead of suturing the central tongue forward. I had gotten about 35 degrees of effect from the first operation, which the second did not appreciably increase. This, therefore, is not my typical method. One case later developed a gonococcus infection and the final result was a failure.

*Shortenings of externi for paresis of that muscle—2.* Cosmetic and functional results were secured in both cases without tenotomy of interni.

*Shortening of paretic interni to correct exotropia due to the paresis—3.* In all of these tenotomies were needed to aid the shortening of the weak muscle. In two perfect results were secured. The other was a case of 70 degrees exotropia due to 3rd nerve paralysis of 25 years standing. She simply wished to "get the eye somewhere around to the front" and we got 53 degrees of the total which was the best possible I believe.

*Shortenings of interni to correct concomitant exotropia in degrees varying from 9 to 55 degrees of arc—6.* In five of these full results were obtained without tenotomy; in the other, the outer two-thirds of the upper and lower recti were cut increasing by 5 prism degrees, the effect produced by the shortening which was insufficient due to error of judgment—only 8 prism degrees being secured.

*Shortenings of interni to correct insufficiency of convergence—3.* Two of these were on the same man and increased his convergence from 5 to 26 meter angles. In spite of this tremendous increase an exophoria of 7 prism degrees was reduced only to 4. An externus was partially cut by my multiple incision method and orthophoria secured. The other case had normal balance for distance, but 14 of exophoria for near, and but 6 meter angles of convergence, which was increased to 11 by the operation. The headaches he used to have after near work have ceased.

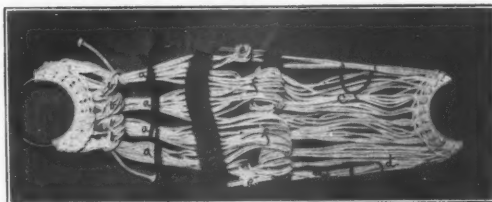
*Shortening of a superior rectus to correct a paresis of 30 years standing—1.* Before operation the woman could fuse images only in the extreme lower limit of rotation, whereas, afterwards she could fuse to a point 10 degrees above the horizontal—measured on the perimeter.

This case was checked up six months later and found to have been corrected 10°. The remaining 9° was secured by partial tenotomies and she now

has vertical orthophoria. This later information operates to remove the case from the list of failure to that of success.

*Shortening of an inferior rectus for a 19 prism degree concomitant hyperphoria.* Through fear of doing too much too small a catgut was used and an inappreciable effect was secured. This, therefore, is the only absolute failure in my typical method and was due to error of judgment. The other failure was the one where the tendon was shortened in three bands.

One of the greatest advantages of this operation is, that squint cases may be operated on at any age, consequently, in young children it may be done, allowing the faculty of binocular stereoscopic vision to be developed in a normal way, and amblyopia exanopsia be prevented without the necessity for monocular patches, or the use of atropin in the good eye. There is no more reason to suppose that a pair of eyes straightened by an operation such as this will not remain so (as well as eyes that are naturally straight to begin with) during the course of head development. My last two operations were in children three years of age, and the immediate results were excellent. They are too recent to include in the statistics. When it is remembered that these represent my first 40 consecutive operations; that the method is still in its developmental stage as regards the estimation of amount of shortening needed in any case; that no tenotomies of the interni have been done; that no binocular bandaging has been used; that in all cases the patients were permitted to go about their usual occupations, many even without a monocular bandage, I think you will agree with me that the results are, to say the least, unusual.



A non-suture ocular.

Figure 1.—(a) Course of rope loops about strands of girth; (b) loops thrown about shortening rope by straightening it; (c) loop of shortening rope under a marginal band; (d) ends drawn through forming a double half hitch; (e) double half hitch transferred to marginal bands by straightening the shortening rope; (f) doubling and relaxation of the central section of the girth.

With an operation as certain and safe as this, I am able to follow an advice of Dr. Valk who says "with an operation that is perfectly safe and simple do not let the words 'operate as a last resort' influence you in any way. Decide from your examination that an operation is necessary and you may be confident of success." By this he means functional as well as cosmetic success.

Therefore I can see no reason for allowing so many cases to suffer for years from headaches and other reflex symptoms of eyestrain when the cause can be so easily and safely removed.

The present handling of muscle cases by the



average oculist is much like the older methods of handling intra-nasal cases—that is, largely temporizing in character. Nowadays intra-nasal work is practically entirely operative. Extra-ocular muscle work, will before long reach the same position and the hope of permanently altering anatomical defects by prisms, exercises, and other temporizing measures, will be given up.

A detailed description of the technic has been omitted, as taking up too much time, and I would refer any who may be interested, to my article in the *Ophthalmic Record* of December, 1914, as I have only made a couple of minor changes since that date.

#### Discussion.

Thos. J. McCoy, M. D.: I received Dr. Hulen's paper just a few days before coming to Fresno and have jotted down a few ideas I wish to offer in discussion of the same.

I congratulate ourselves on the excellent paper contributed by Dr. Hulen, covering so much of the subject in the brief time allotted him, again reminding us of the most modern and approved methods of treating this disease mechanically, and surgically, and describing his procedure in tucking the tendon which appeals to me more than the others I have witnessed. I am in hearty accord with him in the earliest attention for the development of fusion, binocular vision, and correction of strabismus for the attempted relief of amblyopia.

Thanks to the long and earnest efforts of Priestly Smith, Claud Worth and others, for their invaluable findings in establishing facts and methods, that we may prescribe relief. Few men have the opportunity, in abundance of material, the enthusiasm, and earnestness in specializing on this line of investigation as my instructor, Claud Worth of London. His ability and painstaking methods soon became recognized by his colleagues and he was favored by their referring cases to him in the Royal London Ophthalmic, the West Ham, East London and Loughborough Hospitals.

Think of notes on 2337 squint and heterophorias. Of these 1729 convergent squints along to May, 1906. After proofs by their investigations on the benefit of early attention in this disease, I am not surprised at Dr. Hulen taking issue with the gentlemen mentioned in his paper for waiting until the period is passed, to benefit the vision in these cases.

The paper described comprehensively the different findings, and methods of handling each of the three sample cases, and impresses the necessity of careful and early treatment in each. Unfortunately for the lack of training, and knowledge of fusion, binocular vision, and other causes of amblyopia and the early relief of the same by the family physician, who first sees these cases, it is late and many times too late for their relief. He should be a walking encyclopedia of medical information, both general and special for us, willing to assume all responsibilities for the patient as specialists in general, referring all cases, though it greatly depletes his income, even to starvation of himself and family; further, willing to assume the blames all, the errors all, of the profession and mankind in general in the beginning as in the dim declining years of life with a satisfied and sublime hope of his reward in Heaven.

The cardinal symptoms generally found more or less in every case of convergent strabismus are abnormal convergence, the imperfect development of the power of fusion, the visual sensation of the crossed eye is suppressed, the vision is subnormal and the eyes are hyperopia with or without astigmatism. Only very great anomalies of position furnish direct cause. It has been proven

that amblyopia is not the cause, but the result of strabismus. If we consider a defect in the power of fusion to be the most important cause of strabismus, we can account why the error of refraction besides hyperopia is an exciting factor. Anisometropia is a predisposing cause and deviations may arise after excitement, fevers or convulsions. As one of the proofs of the absence of fusion, the cause of strabismus is a fact, that excellent cosmetic results have been obtained from operations, and yet the patient has no binocular singular vision. They may see double and cannot fuse the image although close. An imperfect power of fusion producing strabismus convergence. An abnormal innervation may develop, nervous factors, etc., and more is the urgent demand for the early relief as advocated in the paper. As the doctor has said there are cases, that after careful examinations, we find the only relief is by operation without delay, as an attempt to improve the vision as cosmetically.

The result of advancement after the methods of Worth and Reese have been so satisfactory in my experience, at times with some modification. I have never attempted the tucking method. However, the simplicity of the method appeals to me.

P. A. Jordan, M. D.: I have never had any experience with Dr. O'Connor's operation but it appears to me to be very simple and I am going to try it.

Regarding Dr. Hulen's operation of 1910, I have had some experience with it and always with the greatest satisfaction. I was much pleased when Dr. Hulen said to operate early. My belief is that from six to eight years is often too late. I have been chagrined, at times, to have patients of six, eight, ten or twelve years of age presented to me with the advice from the family physician, that they had been held aloof from an operation, thinking that an early operation would tend to an over-correction later on. I would suggest very early operation when treatment and correction fail. And readjust an over-correction in later years if need be.

I had one experience recently which I shall not soon forget. I was doing the Dr. Harry Woodruff operation of tendon tucking, and in order to make the sutures pass through more easily, I passed the 20 day chromicized catgut through vaselin. I recovered the sutures at the end of twenty days through an abscess, they not having absorbed at all. The abscess healed, but the squint is about the same as it was in the beginning. I think I shall try Dr. Hulen's new method more often than heretofore.

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## GLAUCOMA; A CRITICAL SURVEY OF PRESENT METHODS OF TREATMENT.\*

By HANS BARKAN, M. D., San Francisco.

The present methods of treating glaucoma can be divided into three classes: a well-defined medical one, the treatment by means of myotics; a well-defined surgical one, the classic iridectomy of Von Graefe; an ill-defined surgical one, the principle of which is to obtain a permanently filtering fistula of the eyeball; a certain hygienic and medical supervision and treatment is applied to all these groups and counts no more in the results obtained in one than in the other. This paper will take up these groups in the order mentioned, making an attempt to deduce from a study of the literature and from personal observation which group is likely to prove the useful one in a given case, and what may be said at present as to the advantages and disadvantages of each group, irrespective of any given case.

We all realize that the myotic treatment has its limitations: the class of case in which its use is contraindicated is that which can not be kept under observation; the itinerant clinical visitor; the mentally slothful and careless patient, private or clinic; the patient journeying to some spot remote from medical attendance. For all these I believe some operative method to be the only logical treatment.

Ophthalmologists all over the world have agreed for many years—since Von Graefe's iridectomy and through and including all the later operative proceedings—that the myotics properly used will do the following: An acute glaucomatous attack they will render easier of operation; the occasional exception may recover with their use alone; it may, as Schmidt-Rimpler points out, be wiser to rely on them in a one-eyed, aged, atheromatous individual, combined if needed with posterior sclerotomy or Heine's cyclodialysis, than to resort to iridectomy; in the chronic sub-acute form they are pacifiers, crutches for the eye to lean upon, and do not for long detain the inevitable; in glaucoma simplex they act at their best and their employment in this class in preference to any operative proceeding has roused much discussion since Posey's results and advocacy of them; in glaucoma simplex iridectomy has proven of little value; the value in these cases of sclerectomy, of trephining, of permanent fistulas by means of gold threads, or of various other mechanical devices—methods by the way just as old in application and principle as Elliot's trephine is—remain very much to be proven. Five or ten years of good results is not conclusive; this impression is strengthened when reviewing the end results as published by the chiefs of many large European clinics—the statistics on all forms of glaucoma except the acute inflammatory attacks promptly operated upon, are very sad when the cases are followed long enough. While there are exceptions in respectable amounts, the larger proportion lose ground steadily, in spite

of surgical or medicinal treatment. It warns us again that immediate results, or results after a few years only, are no criterion of permanent cure. What are we to do at present with our myotics? I should sum up the prevalent opinion of the leading ophthalmic surgeons as follows: In an acute attack, attempt by their means to reduce tension, relieve engorgement, deepen the anterior chamber, narrow the pupil, supporting this effort by leeches on the temple, dionin in ten per cent. solution, hot or cold compresses, morphine and general eliminative methods. Follow this proceeding by operation. Should light perception even be lost in the attack, this proceeding should be used, provided you see the patient in the first hours of the attack; 12 hours may be allowed to pass before the prospect of obtaining a good result by operative means is lowered; the loss of vision during this period is caused solely by the steamy cornea, turbid media and functional paralysis of the retinal elements, not by permanent anatomic damage.

As a method of treatment in all the forms intervening—the acute inflammatory attack at one end of the scale, glaucoma simplex at the other—they are worse than useless. Sub-acute cases of all types—that is, everything but glaucoma simplex—should be operated upon. The myotics will hold these cases too under control for some time, in many instances—yet a few years at the most sees in practically all of them a marked progress in the disease. In reviewing the mass of literature, direct references to which I shall not bother you with—a bibliography will be published with the paper—it is my impression that the present status of treatment of this class is as early operation as possible. Myotics are useful in the after treatment, provided the pupil reacts to them—if it does not, they are useless. In glaucoma simplex the myotics have proven most useful—and in this form the iridectomy scores but a low per cent. of good results and in a considerable number hastens the evil end. Our present operators are much divided on the question of treatment—some seldom operate, claiming better results with myotics, others, since the Elliot, the Herbert, the Holth, the La Grange and other operations intended to provide permanent subconjunctival drainage, operate on them by one of these methods. Graefe's iridectomy has in this class practically been given up. One thing I have noticed in reviewing the literature is, that the men of greatest experience are relying on the myotic treatment in glaucoma simplex to a great extent and speak with a certain pessimism as regards any appreciable benefit conferred by operation; especially often do they mention cases taking a worse course following operation, until the conviction has come to me at least, that the greatest per cent. of safe results will come to him who employs in these cases the myotic treatment, reserving operation for those who fail in function in spite of these drugs. I should conclude that as long as a glaucoma simplex retains the same vision and fields with which he came to you, just so long is the myotic treatment the

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proper one; only when these begin to deteriorate, or there develop, in spite of myotics—and massage, of which later—transient periods of obscurity and halo about the light—a certain sign that tension is raised at the time—is operation to be considered.

Turning to the classic iridectomy of Von Graefe, we find rather a reversion to its use in the recent literature. I do not mean that it had ever been abandoned, but the Elliot trephine has bored its way as persistently into our heads as it has into the eyes of our patients and it was therefore rather a surprise to me to see how many of our best men were preferring the iridectomy as the method of choice in acute attacks, using it with fair frequency in the chronic inflammatory and giving it up in the simple type only. Why is the trend of ophthalmic practice again returning to iridectomy for acute inflammatory glaucoma? Because it has been demonstrated by cases followed for years—I mean by that 15 to 20—that the great majority, variously estimated at from 70 to 80% remain cured. That once successfully operated, no after complication of the operative method employed need be feared. Can as much be said for the Elliot; taking it as the type of the permanent drainage operation most employed? Decidedly no. That the Elliot relieves the acute attack as well as the iridectomy, is true; that as great a number will stay intact and cured is not proved, as enough time has not elapsed to gather comparative statistics, but seems not likely. Why? The answer in the literature of the last two years is—too many late infections. These, varying in intensity from iritis to panophthalmitis, are trickling in from various clinics and private case records, in all countries; three to four years ago only an occasional one; now mounting to a respectable total, a sum which is bound to form every year a larger and larger per cent. of the total cases, if Elliot be adopted indiscriminately; for that means an Elliot done on good and bad conjunctivae, on people of good, low, indifferent or bad resistance to infection; the factor of skilful or of bungling surgery will remain fairly constant whatever method be employed. The planting of a permanent fistula then, into the eye of a glaucoma whom we know stands just as good a chance with iridectomy—and that seems, from my review of present day opinion and practice to be the belief—does not seem justified. As in all operative proceedings, there are exceptions to the rule. There are acute attacks of glaucoma in which it is so difficult to perform an iridectomy and in which it is so dangerous to attempt one, that here the greater permanent risk of the trephine operation must be ventured. In the chronic sub-acute forms iridectomy is not efficient in the majority of cases; in these and in glaucoma simplex we find the trend to be toward using some of the permanent fistulating operations, the Elliot being the choice of the majority. Permanent reduction of chronic hypertension. Graefe's iridectomy seems to accomplish in only a small number of cases; witness its inefficiency in glaucoma simplex. In view of the possibility of after

infection by the fistulating methods, there is becoming evident even in chronic inflammatory glaucoma, however, a tendency from some quarters at least, to do an iridectomy first and to add a trephine opening if the case does not improve. De Wecker, a good number of years ago, pointed out that those cases which did well were the ones with broad and ectatic scars and even then described the condition of the conjunctiva over them as being indicative of drainage; massage of these eyes after iridectomy was tried, the idea being that it tended to spread the tissues of the scar apart and allow freer escape of fluid. Gradle, of Chicago, advises massage as a supporting means of treatment; that it reduces tension somewhat is certain; one has only to feel a glaucomatous eye and then let ten students test the tension, feel it again and note the difference. Post-operative treatment in all cases should be continued by myotics; in a rather large series of cases observed, one clinical fact here has struck me; some of the fistulating eyes react very well by pupillary contraction to the myotics, some of the same general appearance and previous tension, do not; in many instances the right and left eye of the same patient. In these cases the eye not responding by pupillary contraction to myotics hardens and gradually loses function, in spite of the fact that clinically it appears to have sub-conjunctival drainage. In this fact I believe we are offered some index as regards prognosis; the eye, the pupil of which does not respond well to eserine, in spite of a trephine opening, I consider the prognosis to be poor in, no matter what or how many operations may be added. It seems to me undeniable that relief of tension alone does not constitute the cure in all cases; there are other degenerative factors involved, possibly nutritional, possibly nervous, entirely apart from the tension. The saying of Schnabel, "anything, anywhere, anyhow in the anterior chambre," will certainly cure a certain number; be it a large iridectomy embracing the root of the iris, a small one leaving the root, a cyclodysis, an iridontasis, an iridencleisis, an Elliott, a LaGrange—a certain number are and stay cured; but the other group will not be cured by "anything, anywhere, anyhow," in the anterior chambre—and here the cause is often not mechanical and located anteriorly. Unfortunately we have no way of separating these two groups clinically, thereby rendering a more accurate prognosis.

Turning to the third group, the one obtaining a permanently filtering fistula—in 1906 Elliot advanced his trephine operation—since then this operation, LaGrange's Sclerectomy, Herbert's short flap method, various deviations and additions in the form of silk thread or gold setons, have been the representatives of the filtration group. Hailed at first with great enthusiasm, employed extensively in all types of glaucoma as the operation of choice, we now find men of wide experience not quite as enthusiastic as they had been—find them resorting to the Elliot only when iridectomy promises little—altogether find that the tendency is to limit the Elliot to chronic inflam-

matory glaucoma and to glaucoma simplex—and in the latter only should the myotics prove insufficient. The occurrence of late infection is one reason; it is interesting to note, also, that the occurrence of an infection or two made some surgeons review their previous iridectomy results carefully: these were then found to be so good, that in view of the ever present danger of infection, they decided to return to their original method. Others, seeing the infection increase—in the hands of good men, who reported them—it surely is not unfair to believe that many infections are not reported by the average practitioner—remembered the old surgical principles of ophthalmology—the recognition as in cataract operations, of danger by infection in iris prolapse, in cystoid scars—and returned to the iridectomy as their choice. What are the results of the fistula operations? And right here I feel that we should throw out of court all statistics based on any other than civilized communities; those of India for one, those of the big general hospital in Jerusalem, for another. This type of operation has been employed about six years in Europe, about four years in America; these statistics count, some of them—insofar as statistics of such a short time can count in a disease the course of which is years. The reports here are good—apart from the after-infections, fully as good as iridectomy; in glaucoma simplex, better. Better in so far as no immediate deterioration after operation happens—or but very seldom: are they better in the long run? We don't know—there has not been any long run yet. We do see infections—how many will there be in the long run? We don't know.

Personally, I like the Elliot operation. I have done a fair number, with no infections, as far as I know, and assisted at 140, all of which were smooth; nor did I see an after infection appear at the clinic in a two years' residence. In view of the occurrence of after-infection, however, of the fact that some other methods of procedure work as well, in a well-defined group of cases; and partly from personal conviction, partly from a review of the best literature on the subject, I will end by submitting a table of therapeutic preferences, which should at least have the merit of arousing discussion.

(1) In the one-eyed, no fistulating operation unless all other methods fail.

(2) In acute inflammatory attacks, such reduction as is possible by myotics, followed by iridectomy; this if technically very difficult, preceded by posterior sclerotomy.

(3) In chronic sub-acute glaucoma, iridectomy or Elliot: the former should the eye be in relatively good condition, the latter should it not be.

(4) In glaucoma simplex myotics while in statu quo. Elliot if it fails.

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#### Discussion.

E. C. Sewall, M. D.: I have taken much pleasure in Dr. Barkan's paper. It shows judgment in the selection and clearness in the exposition of



the views on the subject as recorded in the literature.

I have performed Heine's operation of cyclo-dialysis a number of times, but am convinced that the principle involved is fundamentally wrong. In one case only was I pleased with the result and that was following the luxation of the lens. This eye became of normal tension and retained it.

My experience with the Elliot operation is small but very satisfactory. I believe it is an operation of great worth. Further experience will teach us where most is to be expected from it.

C. M. Hosmer, M. D.: I desire to report operative results on six eyes—three cases. M. M.—A woman of thirty-two years, chronic glaucoma with recurrent subacute attacks. Left eye trephined February 11, 1914; right eye April 3, 1914. In each eye there has been some low grade iritis with pigment adhesion to anterior capsules. Vision with correcting lenses—O. D. 6/12, O. S. 6/15, O. U. 6/9-1. In each eye there is a thin transparent conjunctival covering of a widely patent scleral trephine-hole. I live in constant dread of deep infection.

Mrs. Q.—A woman of sixty-two years,—type of glaucoma as above with long periods between mild attacks. Right eye, vision 6/6 but with tension rising and field narrowing during six weeks' observation. Left eye absolute glaucoma. Right eye was trephined and immediately followed by violent acute attack in left. On this eye, the left, an iridectomy was done. A stormy and long drawn out inflammatory process followed in each eye with total blindness.

The third case was that of a man with simple chronic glaucoma. Both eyes were trephined and in each the ballooned out iris picked up and snipped off. In neither eye was there the slightest inflammatory reaction. Operatively the results were ideal. There was not, however, the least benefit clinically and he has gone on to practical blindness.

F. M. Shook, M. D., Oakland: I would like to ask Dr. Barkan if he has compared the filtration time with the Schiotz tonometer in his trephine cases and his iridectomy cases? Some three years ago I determined the rate of filtration of about twenty cases of glaucoma which had been operated by the Elliot method. Nearly all of them showed a filtration rate which either approached closely to the normal rate or was even less. The technic followed was that of Schoenberg, whose paper inspired the work. It would seem to me that a study and comparison of the tonometric readings preceding and following the operative treatment of glaucoma by the trephining and iridectomy would give data from which very exact deductions might be drawn, as regards the sphere of usefulness of these operations.

There are two accidents which the beginner frequently makes in using the Elliot trephine, (1) wounding the anterior capsule of the lens with a resulting traumatic cataract; (2) wounding the ciliary body by directing the instrument too far backward.

V. H. Hulen, M. D.: In the main I agree with Dr. Barkan's excellent presentation of this important subject. I have, however, more confidence as yet in the trephine operation than the previous speakers. The trouble is that we are apt to become too enthusiastic at first over new methods of treatment, and later, when we see or read reports of unfortunate results in even a few cases, we tend towards the other extreme. I have made it a point to see many operators both in this country and abroad perform the Elliot trephining operation, and it was noted that but very few of these carried out the Elliot technic precisely. To obtain the best results it is particularly important to observe the precise and

correct technic put forth by Elliot, any deviation, intentionally or otherwise, is unfair to both the operation and the patient.

I must criticize just one statement as I understood it as made in Dr. Barkan's paper, i. e., in glaucoma an iridectomy may be done first and if it is not successful it could then be followed by an Elliot trephining. The eye upon which an iridectomy has been done previously for the relief of glaucoma is not in condition to give as good a result from secondary trephining as could have been expected to follow one done primarily. One reason is that an iridectomy is usually done above and that also is the site of election for trephining especially to avoid the danger of secondary infection. Now an incision having been made above for the iridectomy is followed by conjunctival adhesions, etc., which make the subsequent formation of a correct flap difficult or impossible when trephining secondarily, furthermore the conditions of the eye are quite different.

K. Pischel, M. D.: Several years ago we invited Dr. Martin Fischer to the meeting of our section of the San Francisco County Medical Society. He spoke very convincingly about his theory of glaucoma and demonstrated his interesting experiments with excised eyes put into weak acid solutions, which caused the vitreous to swell and sometimes even burst the eyeball. He claimed and repeated this claim in his newest publication, "we have in the use of subconjunctival injections of sodium citrate solution, a method by which we can at any time rapidly reduce the abnormal tension of an eye in a state of glaucoma."

I tried it in several cases but did not find any lowering of the tension in any case. The pain from the injection was always very severe.

Colonel Elliot published his first paper on trephining in 1909. I had the pleasure of meeting him in Birmingham at the British Medical Association in 1911.

I have performed this operation thirty times in twenty-three eyes with the following results:

Vision—Better in 6 cases; the same in 7 cases; worse in 4 cases. In 6 cases amaurosis existed before the trepanation.

Field—Larger in 7 cases; the same in 4 cases; smaller in 1 case; in 8 cases the field could not be taken.

Tension—Lower in all cases but one in which it was doubtful.

I consider these results very satisfactory. In chronic and simple glaucoma, where the iridectomy as formerly made always reduced the central vision on account of the coloboma, trephining with basal iridectomy is decidedly superior. I wonder whether the late infections could not be reduced in number by stitching the flap? While Elliot does not consider it necessary, I always stitch the flap with rat-tail sutures because the one time I did not stitch it it curled; in that way it may leave the wound practically uncovered.

While at the beginning I used Elliot's trephine, or, as Webster's Dictionary would call it, "trepan," I adapted it later to the dental engine. This allows much quicker work, which is of some importance as the patient is apt to become unruly. I have had a stop made to prevent the trepan from entering further than the anterior chamber.

Hans Barkan, M. D.: Regarding the observations of Dr. Franklin, it is true that it is hard to keep some patients under the use of myotics, and, of course, there may be reasons in some individual cases why one should substitute operation almost at the very beginning, but regardless of this I think the theory is correct, if the vision remains the same as it was when the patient came to you. Dr. Franklin spoke of secondary cataracts in these cases. In my own experience, and in the cases in which I assisted Dr. Meller, I did not see



this happen once. Iritis is combated in these cases by the instilling of a 4% solution of atropine twelve hours after the operation. The condition of the conjunctiva must not be neglected. The conjunctiva must be looked after and the tear sac must be examined. Unless the eye is in proper condition, do not make an incision in the eye ball. We have after-infection spoken of with no reference to the condition of the conjunctiva. In a few cases in which I was to operate, have found a friable conjunctiva and the episcleral layer would be very thin. In these—and this condition can be investigated before operation—I have not performed the Elliot. I think more attention should be paid to this.

The cyclo-dialysis was not used in our clinic. It lowers tension in 40% or 50% of cases. Lowers it permanently in a few cases only. It is not used to any extent. Dr. Sewall's suggestion that it is useful in certain cases of secondary glaucoma is a very good one—those due to luxated or subluxated lens for instance. The suprachoroidal space would fill in with aqueous and during that time it would be very useful, the tension would be lower for a few days or a few weeks and the secondary attack would pass off.

Dr. Hosmer's cases are instructive merely to emphasize the unfortunate results we get. They justify what I said as regards the non-reported cases of infection.

Dr. Shook's remarks interested me very much as I am quite in the dark regarding the matter he mentions, and would like to know more about it.

Regarding Dr. Hulen's remarks will say that I feel very much in sympathy with what he has said, especially about the unfairness of judging an Elliot result when iridectomy has preceded. If you do it down below you are very much more apt to get an infection than if you did it above. Quite a number of infections appear at the point operated the second time. A trephine made below sometimes makes the operation easy in unruly patients, but is more liable to after-infection. I think Dr. Hulen's point of doing one thing or the other is well taken.

Speaking of the Elliot trephine, his point is also well taken. Many take up the Elliot operation because they believe it is easy to do after one has been shown how. A man who does only four or five per year is likely to make a botch of it and these cases are going to be infected.

Fischer's treatment I will leave untouched. I know nothing about it, and Dr. Pischel has told of his experience with it as have some of the other gentlemen.

Dr. Pischel's remarks about suturing the flat interested me very much. I have never seen Meller put a stitch in the flat in over one hundred operations. I have done over forty and have never put in a stitch. I do not know if the technic is any different but my flat adheres tightly, and I have never seen the flat turn over. Infection does not take place at the edges of the flap. It takes place through the flat over the trephine hole.

I am very glad this paper aroused such spirited discussion. Glaucoma is of such interest and importance that only by exchange of experience can we profit very much.

## THE MODERN TREATMENT OF IRITIS.\*

By M. W. FREDRICK, M. D., San Francisco, Cal.

Nothing is better calculated to illustrate the impossibility, or unreasonableness, of drawing sharp lines in the medical specialities than the modern treatment of iritis. Time was when an iritis stood out as a pathological entity; when the oculist saw case after case of iritis, most of which he made fit into the six categorical etiologies, and those which did not were classed as idiopathic. This last class does not exist today, and most of the others have suffered a second etiologic birth. "Idiopathic" is a term which can not walk abroad today without having the finger of scorn pointed at it, and deservedly. "Idiopathic" and "neuralgic" are nothing more than a confession of ignorance of the real etiologic factor, and these terms should be expunged from medical nomenclature.

To use Beaumont's words: "The dethronement of irido-cyclitis from the position of an independent disease to the secondary one of a complication" places the modern aspect of iritis before us in the tersest form. The specialist of today is no longer a court of last resort, but a medical counsellor, an assembler of cohorts, one who calls together all the medical military to discover the enemy's lair, rout him out of it, and destroy him. If what I have said is true about such a small part of the body as the irido-cyclon, how much more will it be true about the larger parts of the body, whose diseases have seemed obscure to us, and have, hitherto, been looked upon as local pathologies, induced by local causes, and presenting local pathologic pictures which were considered individual, instead of participants in systematic disorders. In the light of newer medical thought there is no such thing as a strictly local pathologic process, if we except trauma and subsequent infection.

In regard to irido-cyclitis (I had better said uveitis, for I assume that we all accept the fact that there is no such thing as a strictly localized iritis, but that in all cases where the iris is inflamed the entire uvea is affected to a more or less marked extent), there are certain old-time etiologic factors that are still recognized: syphilis is the most frequent offender and tuberculosis, while not a frequent cause, is well worth consideration. The old designations "rheumatic and gouty" have been put under the ban. They died a hard death, but their decease was welcome to the medical community. Just as the term "black cataract" was shown by the ophthalmoscope to be a blanket term for a myriad of conditions, so has modern research shown that the terms "gouty" and "rheumatic" are but slipshod expressions to designate pathologic conditions requiring really a large number of other descriptive terms.

What has worried the oculist most in the past has been the frequent recurrences in cases of irido-cyclitis. The patients whom he has safely seen through one attack remained well a longer or shorter time only, to again present themselves with a recurrence, either in the same eye or its

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fellow. On again with the warm bathing, atropine, leeches, subconjunctival injections, mercurial ointment, salicylates, etc., only to enjoy a brief respite, when the whole train of symptoms presented itself again. This forced him to accept some permanent dyscrasia, such as "gout or rheumatism," or some so-called local tendency to inflammation, the "idiopathic," and he was satisfied with combating the local manifestations, and folded his hands in pleased content when the eye had consented to become "quiet" again.

Now, however, things have changed. Numerous investigators have forced us to recognize the real causative factors of these repeated inflammations, and to acknowledge that we are shirking our medical duty unless we pursue the enemy unto his last trench, and dislodge him therefrom. The number of investigators in this field has grown to a considerable number, and the literature of the subject has assumed proportions which will astonish those who have allowed the past few years to go by without keeping in touch with the subject. Especially writers in the English language have devoted much time and space to this subject, and, coming before you with this paper today, I do not come with the pretence of presenting anything absolutely new, but with the intention of calling your attention to something that is relatively new, and well deserving of further attention and investigation. One point which I shall insist on further on is the fact that in cases in which gonorrhoea might have been or was suspected, the etiology was allowed by former writers to rest on clinical symptoms, and that the complement-fixation test was not given its proper value. Now, we all know how difficult it is to obtain clinical proof of latent gonorrhoea in women, and how annoying it would be to subject women, especially the very young and the unmarried ones, to genital examinations, especially the very searching ones, necessary to detect an old gonorrhoea lurking in some of the glands, and requiring a most thorough going-into of all the separate parts of the genital tract. With the employment of the complement fixation test we would be saved a great deal of bother in this direction, and the patient need not know that her eye trouble has any connection with her genital sphere, thus saving all concerned a great deal of annoying, and even distressing, explanations. Those who have been in practice for a number of years know that it is not wise to disturb the pool of venereal antecedents by hurling into it the stone of inquiry, especially when the female members of the family are concerned.

While the complement fixation test for gonorrhoea was formerly very unsatisfactory giving positive results in only 5% of the cases, the procedure has now been improved by the use of a great number of strains, as much as one hundred and fifty in some places, so that today we can count on 85% efficiency.

Here are three cases in point which have occurred in my practice recently, which will serve to illustrate the great aid that the complement-fixation test can afford one:

Case 1—M. A., aged 14, virgo intacta. This girl had already experienced six attacks of iritis. She had also suffered with "growing pains," and had a slight endocarditis. After she had two recurrences under my care I decided to inquire more particularly into her history, and was informed by the mother that the girl had a vaginal discharge ever since the age of four. At that time the mother had lodging with her a very nice young man, who, when he moved away, left such a nice soft sponge. The mother decided to use this sponge in cleansing her little girl's genitals, and soon after noticed the vaginal discharge, to which she paid small attention, as so many young girls have similar discharges. The discharge has long since lessened to such an extent that but little of it can now be seen, and that only at long intervals. A complement-fixation test proved positive, and injection of mixed Neisser serobacterin acted like magic on the third attack of iritis, the eye clearing in two days. This was over a year ago, and there has been no recurrence of the iritis, nor has the patient been troubled with "growing pains"; the heart lesion has also much improved.

Case 2—C. B., aged 26, a woman of loose morals. Eye has been bad two weeks, and has already received treatment. No history of rheumatism, and denies lues. Lost one child at the age of three months and has one child living. Under ordinary treatment the eye recovered from the iritis in two weeks. Then the patient spent an evening in one of the popular restaurants, and the next morning the cornea was steamy, the pupil irregular, and the eye very painful. A test of the blood was made for lues, the report being negative Wassermann. Again the eye recovered under warm bathing, atropine and dionin. This time the patient went for a long automobile ride, and, probably, indulged in other excesses, with a prompt recurrence of the iritis. Each time the eye recovered it was exposed to an insult, so that I saw her through six recurrences in four or five months. I then had a complement-fixation test made, with positive result, and the injection of mixed Neisser serobacterin gave a most brilliant result, but she had only the two milder injections, and then disappeared from my sight for financial reasons. I heard afterwards that she had another recurrence, for which she was treated by a colleague, who was also much dissatisfied with her behavior.

Case 3—Mrs. L. C., aged 40, mother of three healthy children. Some years ago had trouble with her right eye, the exact nature of which I could not determine, as the gentleman who treated her at that time has since died. For one week the same eye had been uneasy, and now presents the picture of a low-grade iritis. Immediate dilatation prevented the formation of synechia, but three days later a moderate amount of keratitis punctata, or serous cyclitis, declared itself, the vitreous became hazy, and the vision sank to distinguishing large objects. As the patient gave a history of numerous mild attacks of rheumatism I put her on novatophan. The cloudiness of the media increased, and the vision kept on sinking. An examination of the blood was then ordered, the report being Wassermann negative, complement-fixation test positive. The patient then received a course of mixed Neisser serobacterins, with marked improvement, even after the first injection. She also received four subconjunctival injections of "sugar of salt." In two weeks the media had all cleared, the sight had improved to 6/9, the so-called rheumatism had vanished, and the eye had become absolutely normal in appearance. When she was dismissed two weeks later the sight had improved to 6/6, and all that remained to remind one of her late trouble were two minute dots on Descemet's membrane.

One striking peculiarity of gonorrhoeal iritis is the occurrence of the disease after a history of

trauma. As an example, Lamb, of Washington, D. C., relates the following case:

A jeweler, aged 32, was struck in the left eye by pieces of glass from a broken vase. Both lids were cut. Three days later he had pain in the eye, and five days later he had a marked iritis, with iris bombé, and tension +3. Investigation revealed the fact that he had acquired gonorrhoea five weeks previous to his eye accident. Instillation of atropin and dionin brought no relief, and the vision sank to almost 0. An injection of sensitized gonorrhoeal bacterin, followed by two others at intervals of thirty-six hours, gave almost instant relief. The night before the first injection was given the patient wanted the eye out; the next day he was seeing with the eye.

Posey records a case of uveitis of metastatic gonorrhoeal origin, in which the results were quite unlike those in the preceding case, but the history of the case allows one to doubt his etiologic assumption. The patient had gonorrhoeal urethritis twenty years previously followed by various urethral complications and "rheumatism" affecting most of the joints of the extremities. Antigonorrhoeal bacterins were used without avail, although a synovitis that appeared at the right knee coincidentally with the ocular inflammation yielded rapidly to the injection. Despite active local and general treatment the cornea rapidly melted away, perforation occurred, and enucleation of the eye was demanded. The whole thing does not seem like a gonorrhoeal uveitis, as we shall see later on.

Wendell and Reber, relating three cases of gonorrhoeal uveitis, treated with mixed Neisser serobacterins, report that one case came on after a long railroad journey, and one after an automobile ride. Formerly we were inclined to call these cases idiopathic, or rheumatic, but in the light of modern knowledge we must admit that their etiology is entirely different, and thus acquire a more satisfactory therapeutics. As Small says: "There is satisfactory evidence, both clinical and bacteriologic, that the vast majority of cases of iritis (iridocyclitis) are caused by microorganisms or their toxins." Again, Reber says: "Clinically we cannot, with any certainty, predicate the etiology in a given case of iritis."

Sidler-Huguenin reports fourteen cases of metastatic ophthalmia, twelve of which were undoubtedly due to gonorrhoea. In five of these cases gonococci were found in the blood, and in six pure cultures were obtained from the aqueous humor. Nine were cases of metastatic irido-cyclitis, three of bilateral metastatic gonorrhoeal conjunctivitis. Cobbledick maintains that there is a typical gonorrhoeal iritis, which is characterized by an intense injection of the conjunctiva and sclera, with rather a bright cornea, and absence of exudation of cellular elements into the anterior chambers and of posterior synechiae. This is an entirely different picture from that described by other observers, who mention a jelly-like exudate almost entirely filling the anterior chamber as one of the most striking symptoms of gonorrhoeal uveitis. Cobbledick admits that gonorrhoeal uveitis may be protean in its presentations, and claims, as do other observers, that it is the most favorable type of uveitis as to its ultimate outcome. While I do not accept Cobble-

dick's typical picture of gonorrhoeal uveitis, I do agree with him as to the fortunate termination for those cases in which the etiology has been recognized. As Cobbledick says: "While there are some cases of gonorrhoeal uveitis which have shown themselves very obdurate, the number of these cases has grown much less since the introduction of the use of vaccines and serobacterins." I also agree with his generalization that gonorrhoeal iritis is, as a rule, unilateral; whereas, syphilitic iritis is usually bilateral.

For several years H. Guillery, of Cologne, has been publishing in the *Archiv fuer Augenheilkunde* the results of his experiments on rabbits with the ferments of bacterium prodigiosum injected intravenously, and in his last report, 1915, he gives us the history of some of the animals, in whom he was able to produce as many as seven attacks of uveitis, of more or less marked severity, after these injections. This is proof that even a non-bacterial noxa working from a distance can produce these recurrent attacks of uveitis, and that a body-wide search should be instituted to discover the agent causing these recurrences. Mansilla tells of a case in which there were fourteen recurrences of a gonorrhoeal iritis. Some of us could, no doubt, count as many recurrences in some cases, but we do not signify the exacerbations with that name, but rather consider that the eye is in a continuous state of low-grade inflammation with occasional spells of quiescence.

A very interesting article in this matter is that of C. Goulden, in the Royal London Ophthalmic Hospital Reports for 1914, on "Infections of the Uveal Tract Secondary to Inflammations of the Mucous Membranes." According to Goulden, uveitis may be secondary to an inflammation of almost any part of the mucous membrane tract. That the tonsils should be carefully inspected in all cases of uveitis is shown by the recital of the following case of Goulden:

J. F., aged 46, had misty eyes for twelve months. For five months he was treated by ordinary methods without improvement. The teeth were good. The vision of the right was equal to 6/12, that of left to 6/36. Six months later the tonsils were found to be diseased, and were treated, with immediate improvement of the eyes. Six months later the patient again had a sore throat, and the vision of the left sank to 6/36, the vitreous showing numerous opacities. The tonsils were again treated, and the vision was soon restored.

The typhoid bacillus has been cultivated from the eye of a patient who had an attack of iridocyclitis following a typhoid. In puerperal sepsis the eye is especially susceptible to a metastatic panophthalmitis. In some cases streptococcus has been grown from the eye fluids, and pneumococci have been found in the bloodstreams. A. Netter describes a case in which a suppurative irido choroiditis was due to meningococci. Speaking of the tonsils as offenders Ulrich says: "Experience with alveolar infection in which systemic symptoms were present has made us very cautious concerning the apparently innocent-looking tonsil. Invariably, on closer inspection, and, particularly, after it had been removed, under protest by the throat specialist, this



same tonsil has proven our suspicions correct. In one case the operator confessed that he had found the foulest accumulation of pus he had ever encountered behind one of these innocent-looking tonsils, and the long-standing inflammation of the eye of the same side subsided almost immediately after the removal of the tonsil, never to recur.

A fact that has been noted in a number of cases is the alternation between furuncles and uveal tract diseases. The frequent occurrence of uveitis in influenza has been noted by Reber. Brawley cites two cases of Lawford, in which peculiar corneal disease was cured by vaccine recovered from the urine, a cystitis being present. In ptomain poisoning we have mydriasis, disturbances of accommodation, and paralysis of the extrinsic muscles, showing the strong affinity of the toxins elaborated by the intestine tract for this part of the body.

As to the treatment of syphilitic uveitis, but little need be said, as the frequency of that kind of uveitis has led to a well established diagnosis and therapy. De Schweinitz well says, that many fear the effect of salvarsan on the eye on account of the disagreeable experiences with atoxyl, and he, as well as others, are much in favor of administering full doses of the arsenical preparation in luetic eye conditions. Sambuc, writing from that far-off country of Indo-China, where they are supposed to produce a particularly virulent type of syphilis, describes a case of syphilitic iritis, which had stoutly withstood the mercurial treatment, but yielded rapidly to arsenic.

The question whether it is wise to subject an eye that is already inflamed to the action of arsenic has been answered by most of the observers in this way, that if the inflammation is undoubtedly syphilitic one should not hesitate to give arsenic. And, furthermore, should the eye grow worse after the first injection, one should give a second injection. Some forms of uveitis, especially that form which is associated with late-occurring parenchymatous keratitis of inherited syphilis, do not do well with salvarsan, but are better treated with mercurials, iodides and roborant treatment. Huelp says that the only contra-indication to the use of salvarsan is the presence of a non-syphilitic retinitis or optic neuritis. Its quick action makes it invaluable in preventing the death of valuable nerve elements which, once lost, can never be replaced from any other source. The quick action is also a valuable characteristic of the bacterins; many have recorded their almost magical action, a small dose sufficing in a few hours to cut down pain and inflammation.

As to subconjunctival injections, the use of the mercurial salts for this purpose never gained much favor in this country, owing to the intense pain they cause, even when mixed with analgesics. The only drug that I have used continuously is the solution of sugar of salt, the composition of which is jealously guarded by a San Francisco druggist. Dr. W. A. Martin called my attention to this many years ago. It gives very little pain, and the results are all that could be asked for.

In this connection I would like to cite the very

appropriate remarks of one of the writers on this subject: "The sources of infection may arise from various regions in one and the same subject: sinuses, teeth, intestinal tract, etc., and, therefore, the discovery of a single focus of infection, for example, at the root of a tooth, or in a tonsillar crypt, should not check the search for septic areas elsewhere in the body." Moreover, even if iridochoroiditis is definitely due to syphilis, the removal of a focal infection, for instance, in the tonsil, ethmoid, or gum, is sometimes necessary to procure rapidly the best results from anti-syphilitic treatment. A case is cited in illustration: "A man with acknowledged luetic history, and the usual secondary manifestations, such as sore throat, etc., prior to his eye inflammation, received anti-luetic treatment, salicylates, intestinal antiseptics, all with small help to his eye. After clearing out some pus-pockets in his ethmoids the ocular inflammation subsided with startling rapidity. The nasal focus may have been the real cause of his secondary eye-condition, and the other conditions merely coincident."

This brings us to a consideration of the causative role played by nasal conditions in inflammations of the eye in general, but I feel that we can pass this over with small loss of time, especially as the subject has been so well worked out since Ziem, of Danzig, first drew attention to the subject, and rendered this a field for such brilliant results.

Of late the teeth seem to be the pathologic pet, and, of course, ophthalmology saw fit to embrace the popular idol. Just how much the teeth are entitled to this amatory embrace, remains to be seen, and one thing which seems to call for caution, before setting this focal fiend on the pathologic pedestal, is the remark by Black of London, that 50% of all persons having teeth present either irritation of the vital pulp of the teeth, or an abscess at the root apex, or pus pockets alongside the root. If such be the case we would have to accept the teeth as focal inciters in one-half of the cases of uveitis, and strong proof would have to be brought to prove them really guilty. Allport, in the *Dental Review* for 1904, says that: "The pus pockets alongside the roots may, or may not, be discovered by the radiograph. These pockets frequently involve but one side of a root, or the same side of several roots, and, if the destruction is only on the labial or lingual side, the density of the root may obscure the destruction of the alveolar process. The general appearance of the soft lesions is not a safe guide, as the anterior surface and gingival margins may appear normal, while the surfaces adjacent to the teeth may be much roughened. Gilmer also says that chronic alveolar abscess is present in 25% of all mouths, and that 25% of all adults have chronic suppurations beginning at the gingival margins. While these figures may be correct for England, where the dental conditions are notoriously wretched, as anyone who has lived there can testify, I do not think they will apply to the United States, where the teeth receive more attention than they do in any other part of the world. That,



however, there is a great deal of truth in the dental origin of uveitis, is borne out by numerous observers. In the last meeting of the Eye and Ear Section of the San Francisco County Medical Society, Dr. W. F. Blake described a case in which relief of eye symptoms was quickly afforded by the opening of an apical abscess. Todd and de Schweinitz report several similar cases, in which the opening and sterilization of small abscesses at the roots of the teeth gave cause to the recurrences of iritis. Already in 1879 Nettleship pointed to diseased teeth as the possible origin of uveitis, and Lang thought that pyorrhœa alveolaris was the source of sepsis in one hundred and thirty-nine cases out of two hundred and fifteen cases of eye inflammations attributable to sepsis.

There is a rather lowly disturbing factor in these considerations, and that is the matter of money. To arrive at a correct diagnosis means that the patient must pass through several hands. Our collaborators in the laboratory, while great sticklers for scientific precision and accurate findings, are not in the field for glory alone. A thorough examination is, therefore, restricted to institutional and well-to-do patients. For the person of moderate means, the other expenses of sickness, the loss of work, etc., make such an expensive procedure a thing almost unattainable.

#### Discussion.

M. W. Ward, M. D.: Ten years ago yesterday I read a paper before this section of the State Society, touching on the subject now before us, under the head of "General Diseases as a Cause of Diseases of the Eye." My paper was the only one that was presented before this section at that meeting that was saved from destruction by the "quake," due to the fact that I had not turned it over to the secretary that day.

In that paper I made the statement that three-fourths of all diseases of the iris, ciliary body and choroid, or in other words, three-fourths of all diseases of the uvea were due to syphilis, inherited or acquired. Three-fourths of the remainder due to gout and rheumatism and the balance to toxic and other causes such as gonorrhea, etc.

That was the teaching at that time and I would like to hear it compared with the teaching of to-day.

V. H. Hulen, M. D.: I should like to mention just one point in the modern treatment of iritis not referred to or not read by Dr. Fredrick, illustrated by a case I saw recently in consultation with two other physicians. The patient was suffering from an acute and extremely severe case of uveitis. By exclusion a bad tooth was suspected as the inciting cause. A dentist confirmed our suspicion and treatment of the diseased tooth was followed by a fairly magical recovery of the eye which had seemed almost on the point of disintegration.

H. G. Thomas, M. D.: We are inclined to find one cause and stop with that. Dr. E. V. L. Brown of Chicago reports a case which had recurring attacks of iritis in which they found lues, old gonorrheal infection, a tubercular condition, and an especially nasty condition of pyorrhœa.

In our clinic in Oakland we scan each case carefully and find a great many due to pyorrhœa. Dr. Fredrick has combed the whole situation thoroughly and has searched for the focal infection in all of the cases.

M. W. Fredrick, M. D., closing: In regard to the percentage of cases of iritis, the statistics vary greatly; however, in all statistics a large percentage

are due to syphilis, a smaller proportion to tubercular infection, while a relatively large number are due to gonorrhea. I tried to impress it upon you that we are not to accept the diagnosis of rheumatism in regard to iritis any more, but we must look for a focus.

As to the kind of vaccine I use, I find in gonorrheal cases that the mixed-Neisser works very well. The autogenous vaccines are very good if you have the time and can find the material to culture it from.

I take exceptions to Dr. Thomas' statement that I have combed the whole situation with a fine-toothed comb. I have merely raked it over lightly. Dr. Blake, in a recent meeting of the San Francisco County Medical Society, recited a case in which a man had a tooth extracted and recovered from a persistent eye trouble. Black tells us that 50% have pus in the teeth, either at the apices of the teeth or alongside the teeth. The point that should be made here is that even though you do find one symptom you should not be satisfied with that alone, but should look the case over thoroughly and find every possible focus of infection. Treatment of the other foci of infection will cause a subsidence of the prominent symptom.

### THE EARLY SURGICAL TREATMENT OF SQUINT.\*

By VARD H. HULEN, A.M., M.D., F.A.C.S.,  
San Francisco.

For many years the importance of beginning the treatment of squinting children as soon as the diagnosis can be made has been recognized. To Claud Worth great credit must be given for the prominence and importance of the early development of vision, and fusion faculty in cross-eyed infants. Much good has been accomplished by the early non-surgical treatment advocated, but I believe it a mistake, when squint cases are not thus cured, to postpone the surgical treatment until the patient has passed the age of six or seven years, as has been rather generally advocated. Dr. Reber, in the *Pennsylvania Med. Journal* for May, 1915, says: "14 to 16 years is the ideal age to operate squint." We agree that surgery must be the last resort, but this should not mean that it may be postponed indefinitely. It is just as grave a mistake to begin the surgical treatment too late, as it is to postpone the non-surgical treatment.

To review briefly the handling of squint, in the case of a young child, and by squint I mean all varieties of constant strabismus though in this article I shall have cross-eyes especially in mind. First, the error of refraction must be carefully estimated, and fully correcting lenses prescribed. This can be done when the patient is as young as six months of age or even earlier. Then the amblyopia, if any, must be detected and every effort given to the development of vision in the defective eye by means of atropin and the exclusion methods for the other eye. This may occupy us until the child is three or four years old. At this age we are usually able to determine the absence of the "fusion faculty." Then a few weeks of

\*Read before the annual meeting of the California State Medical Society, Fresno, Cal., April 20th, 1916.

intelligent and persistent efforts with the amblyoscope, stereoscope, diploscope and bar reading should fully develop binocular vision if such is possible. By giving such prompt and consistent attention to young squinters, we usually have exhausted the possibilities of non-surgical treatment some time before the child has reached the age of six years. If the patient has ceased to show any improvement, and still squints, I would advocate prompt operation. As a rule alternating strabismus should be operated upon at first sight. Again, when the vision has been corrected as far as possible, but no fusion power can be acquired, the sooner we operate the better, hoping by the parallelism thus attainable that the normal functions of the eye may be developed before it is too late. Or where no effect has been secured by a fair trial of all non-surgical treatment, I would advocate operation without delay, regardless of the youthfulness of the child. To dally along until the age for obtaining binocular vision has passed is to me unthinkable.

In no case am I able to see serious objection to a resort to surgery no matter how young the child, provided correct and complete non-surgical treatment has been previously given, and I am convinced that it is a highly desirable thing to obtain parallelism before the developing period for the eye has passed. We should not permit the parents of the child to postpone correct operative procedures indefinitely as so often occurs.

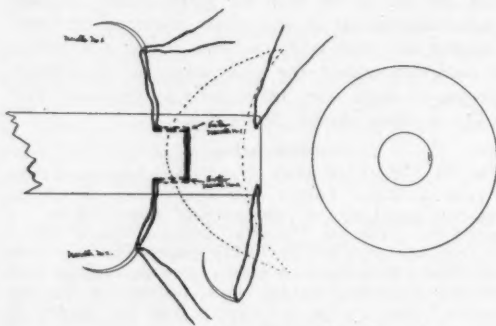
This early surgical treatment, in my opinion, can be safely done only by some form of "tendon tucking." Tenotomy is certainly not advisable in these immature cases, and no method of advancement, or shortening, is entirely safe whereby the tendon is cut loose from its attachment to the globe.

My method in these cases of very young children, or when the muscle is especially small, is quite similar to the one I described in the *Journal of the American Medical Association* for July 9, 1910, page 123, for shortening or advancing an ocular muscle. A reading of that article is necessary for a full understanding of the details and advantages of this modification. A general anesthetic being necessary in all very young patients the reserve sutures (first used as tractors) are exceptionally necessary here for the best results.

Reference to the two accompanying diagrammatic illustrations will render much description of the technique of this operation unnecessary. Instruments required: a speculum, tenotomy scissors, muscle advancement forceps, fixation forceps, tenotomy hook (with straight right-angle), needle-holder, and two separate sutures. One suture of No. 6 black iron-dyed twisted silk, 18 inches in length, with No. 26 full curved sharp, flat needle threaded to its middle; the second suture should be a double one, composed of a white and black No. 6 silk, each end of which is threaded into one needle, making a double suture 14 inches long with a needle at either end.

The speculum is introduced, the assistant brings the operative field to the front. Conjunctiva and

tissues down to the tendon are pinched up, incised vertically just posteriorly to the insertion of the tendon, the incision is extended upwards and downwards. It is usually advisable to excise a crescentic piece of this covering to the muscle. These tissues are separated towards the cornea and also freely in the opposite direction. Next the tendon is loosened along the upper and lower margins and clamped close to its scleral insertion with the muscle forceps, the better to control the globe while accurately placing the scleral stitch vertically as shown in figure one, the black suture with the single needle is used. In extreme cases I insert this suture in the sclera close to the limbus, sometimes making a double entrance as it were to broaden its bite. In most cases it is passed firmly into the tendon insertion. In making this stitch, the conjunctiva is first entered above from without inwards then into sclera and out through conjunctiva below. Draw the suture through to its middle and cut off the needle.



To insert the muscle suture take off the clamp, the assistant lifts up the muscle on the hook, fix one needle of the black and white suture in the holder and penetrate the muscle at one-third its width from the upper edge from without inwards 4 mm. anterior to the point we intend to bring forward to its final fixing point, and draw the suture through to its middle; with the same needle again enter the muscle from within outward four millimeters directly back of its first insertion, come out picking up tendon, capsule and conjunctiva over site of exit. Now take the other needle of this same suture, and duplicate this stitch through the lower edge of the muscle (see Fig. 1), and slip off the needles.

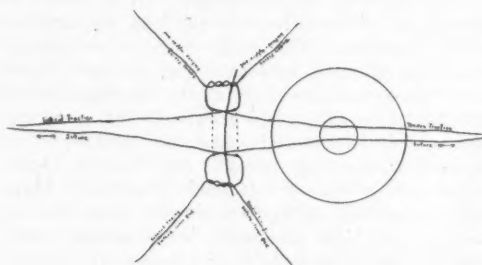
It is evident that we now have two separate sutures, in same insertions in sclera, and also in the muscular tissues. One from each of these is crossed and used on this occasion as traction sutures only. By use of them the assistant has perfect control of the relative position of globe and muscle, and when he has brought the eye to the exact position required, the operator ties the upper ends of the other pair together, and then the lower ends together, making the fixation perfect (see Fig. 2), and the muscle has thereby been folded smoothly on itself.

The traction sutures are left in situ at least until the following day. Then if the squint has been found on recovery of consciousness to have been materially over-corrected, the tied sutures may be easily removed, and remaining traction sutures similarly tied to hold the correct position.

In suitable cases both eyes may preferably and safely be treated surgically at the same operation.

In my operation as described six years ago, the muscle suture had traction on but one thickness of the muscle, and I have rarely found any giving of the tissues, but at least one writer, Dr. Wm. F. Hardy, in the *American Journal of Ophthalmology* for December, 1915, page 353, speaks of this possibility. The doubling in the modification just described, is but little more complicated and eliminates any such objection.

Many details and practical points are here omitted, as they are common in all similar proceedings or are self-evident.



For brevity I have confined this contribution to two points. First, to lay stress on the desirability of operating on certain squint cases early, certainly before the age of six years, in fact at any age after the non-surgical treatment has been conscientiously and adequately employed to the point of no further progress. Remembering that the time for obtaining the valuable binocular vision is usually limited to the first five or six years of life. This, so far as I know, has not been definitely advocated before. And, secondly, to describe a simple, accurate and efficient operation for safe use in these cases.

#### Discussion.

Wm. H. Dudley, M. D.: I have used various operations in the last twenty years. The Knapp operation was used mostly in the hospital and usually the results were very good. Once in a while, however, there was an under-correction or an over-correction. The operation according to Worth, I have found, more satisfactory and have used it for quite a number of years and like it very much, but on reading the previous discussion of Dr. Hulen's operation, I was very much attracted to it. It seems to me that his tuck in the tendon has advantage in certain ways, over any tucking operations I have seen. The retaining suture which he has, is an advantage, as he can adjust the muscles after a few days, and on that account is better than any other I know of. Under either the eye stands anyway after the operation, but if we have an arrangement by which you can adjust the muscles later, when the patient is

conscious and the eye assumes its proper position, then I think we have an element in this operation that stands ahead of anything I have seen.

The Todd tucking operation, which has been used so extensively, for many years, leaves the tuck standing out, and requires much more time to become absorbed than Dr. Hulen's tuck which lies buried beneath the shortened tendon.

H. G. Thomas, M. D.: We will look back a few years, and remember the bad results of practically all the old tenotomies, we will understand why the modern methods of tendon advancement are slow in being taken up, and recommended by the general men, because so many of the over results of the old tenotomies are still with us. So, therefore, I think we should not blame any one, or call them criminally careless, because the specialists have not taught tendon advancement long enough.

The main idea to-day is the early operation, which I believe in and advise. Dr. Hulen's operation is a marvel of ingenuity, but if you have seen the O'Connor operation you have seen the simplicity of it. There are no stitches to be removed at all.

Kaspar Pischel, M. D.: I would like to ask one question. What becomes of the tucked tendon? Have no experiments been made upon animals to find out the ultimate anatomical result of tucking of tendons?

Closing Remarks: V. H. Hulen, M. D.: While Dr. O'Connor's operation is original and very ingenious I cannot think of it as a practical operation for accuracy in execution or safety in estimating results, requirements so necessary in squint and all ocular muscle work. One can get a beautiful demonstration on a broad and fixed object like a saddle girth of this twisting or quilting suture, but when we have to deal with small, narrow ocular muscles with their varying tensions and fragility, Dr. O'Connor's suture would surely be extremely difficult to place and definite results in many cases it would seem to me, to be out of the question. Also my experience with catgut in eye muscle work has been most unsatisfactory.

Roderic O'Connor, M. D.: In regard to irritation by catgut, I used chromic catgut in one case and the resulting reaction was extremely severe and lasted several weeks. For that reason I always use Lukens' 20-day tanned non-iodized gut. Plain gut would probably remain long enough to answer all purposes, but I have never tried it.

As to looping the tendon, I do not loop the entire tendon, but only a narrow band on each margin, which, together, are strong enough to take the full action of the muscle during the healing period, and so relieve the suture holding, the remaining central section from all tension, thus preventing any loss in effect from cutting through of the sutures, so common in all other methods. There is nothing to fear from an over-correction, for the two opponents are now strong, and by pulling in directions diagonal to each other, the globe is acted upon on the principle of the parallelogram of forces, and recedes into the orbit compressing the orbital fat, till a point of balance, determined I believe, by the desire for binocular vision, is reached. Many of my cases show an immediate under effect, but in practically all, this disappears, and it increases during the healing period. I explain this as due to temporary paresis from stretching, not relieved by a tenotomy of the opponent. As the opponent gives way to the increased tension of the operated muscle, and as the latter regains its power, the effect naturally increases. The point of the operation is, that it does away with all constriction, with the attendant cutting and loss, unavoidable in all the methods depending upon sutures and ligatures.



## TUMORS OF THE KIDNEY.\*

By H. C. MOFFITT, M. D., San Francisco.

Three questions are not infrequently raised by the history or examination of a patient:

I—Do certain symptoms suggest a kidney tumor, and of what weight are they in the diagnosis?

II—Is an abdominal mass a tumor of the kidney or of some other organ?

III—Do certain general or distant signs point to a kidney tumor, or do they help decide the nature of a questionable abdominal mass?

I. *Symptomatology.* The importance of good histories in diagnosis still needs emphasis. The patient may tell of the tumor he has noted, but usually certain symptoms he details direct attention to the abdomen or kidneys.

1. *Hematuria* is of prime importance and any history of blood in the urine demands thorough investigation. Symptoms and the cystoscope will usually decide whether the bleeding is from the bladder. The common causes of bleeding from the kidney are stone, tuberculosis and tumor. The bleeding of nephritis should be capable of recognition and we should look askance on diagnoses of vicarious or essential hematuria, until cases have been most thoroughly examined. Bleeding is a common symptom in tumor and often the first. It may be frequent, or at intervals of months or years. It may be small, or profuse and deadly. It occurs frequently without cause, but may follow exertion or trauma. There may be no pain, or severe attacks of colic, due to passage of clots down the ureter. Small worm-like dots have been regarded as particularly characteristic of neoplasm by Israel, but in my experience they are most often absent, and may occur in bleeding from other causes. Occasionally one obtains a history of hematuria in abdominal tumors not of kidney origin, but the occurrence is rare, and, in a doubtful case, hematuria should decide almost certainly for kidney neoplasm. Recently an unusual case of enlarged spleen was to be sent me for examination, there was a history of hematuria and the suggestion to examine the mass more carefully led to a change of diagnosis to kidney tumor. Microscopic blood in the urine is of much less significance than frank bleeding, it has been observed in a number of our abdominal tumors not of kidney origin. Apart from hematuria the findings in the urine are not usually important. Large, irregular polymorphous cells have been found in two of my cases. Polyuria may occur, albumen may be due to pressure on the renal vessels. Last year in the University of California clinic we had a case of infected carcinoma of the kidney with pus in the urine. A few leucocytes in the sediment are not uncommon, but in my experience, pus in any amount is most unusual and should suggest tuber-

culosis, pyonephrosis, pyelonephritis, or infected cysts rather than tumor.

2. *Pain.* Pain, like hemorrhage, may long precede other symptoms or signs of tumor. In one of my cases, pain in the right loin and thigh, was noted six years before hematuria, and the recognition of the renal tumor. The pain may be dull, or neuralgic, colicky and extremely severe. Intense pain may accompany hematuria or be caused by hemorrhage into the tumor. Pain may be local, and is then of great value in determining the affected side, or it may be referred to the epigastrium or sacrum. It occurs more frequently with tumors of the upper kidney pole. It radiates not uncommonly in the areas of distribution of the ilio-inguinal or genito-crural nerves, more rarely of the lower lumbar and upper sacral nerves. Pain in the testicle has been so persistent as to lead to castration without recognition of the renal tumor. Pains in the extremities—arms as well as legs—may be persistent and may disappear after removal of the tumor, but any distant pain should awaken suspicion of metastases. The areas of hyperalgesia of Head have been of no assistance to me in diagnosis. The pain of hydro- or pyonephrosis or of renal neoplasm may, in my experience, frequently be referred to the epigastrium and lower abdomen and, when associated with anorexia, vomiting, flatulence and distension, is falsely interpreted as meaning stomach, gall-bladder, appendix or pelvic disease. Braasch from the Mayo clinic, in writing of hydronephrosis, notes that in 46 cases 44% had previously been operated upon elsewhere for other conditions erroneously thought to be the cause of the abdominal pain.

3. Polyuria and bladder symptoms may occur with neoplasm as with other renal disease, but they are rarely of importance in diagnosis.

II. *Tumor.* Hematuria and pain or distant symptoms or signs may demand search for a possible kidney tumor, or a tumor of the abdomen may be noticed by the patient, or found on examination, and the question is raised, is it of kidney origin? Judgment in regard to abdominal tumors still remains difficult despite all modern helps in diagnosis; in fact, the multiplicity of available tests and methods of examination is often confusing rather than helpful. Careful palpation of the abdomen, frequently repeated, with charting of the various organs or masses palpated, together with the size, shape, consistency, mobility of such masses must continue to be the most important method of differentiating abdominal tumors. I would emphasize the advisability of repeated examinations; an abdomen may be difficult to palpate one day and easy the next, dependent upon the patient's nervous condition quite as much as upon variations in content. This is particularly evident in consultation work. In palpating abdomens have the room warm, the patient warm, your hands warm. In palpation of normal kidneys, or in detection of small kidney tumors, it may be of advantage to have the patient half sitting, or turned on the side with trunk and thighs bent toward each other. Bimanual palpation is of great importance. Hot poulticing or a hot bath, greatly helps to

\* Read before the annual meeting of the California State Medical Society, Fresno, Cal., April 20th, 1916.



relax muscles; examination under ether is not often necessary or advisable. In fat patients it may be very difficult to determine anything about the deeper abdominal regions; it is especially difficult to separate kidney tumors from enlargements of the liver or spleen. Normal kidneys may vary much in size and shape and in thin patients, or in cases of marked enteroptosis, it is wise to hesitate with the diagnosis of abdominal tumor. A long kidney in thin patients may be taken for an abnormal kidney with tumor in the upper pole. One kidney may be much larger than the other, both to palpation and by x-ray without tumor, tuberculosis, hydronephrosis or cystic disease—probably because of differences in blood supply. Movable kidney on the right may be unusually movable and may lie transversely. Several times in cases of former large left sided pleural effusion during which spleen and left kidney were pushed down and mobilized or in chronic splenic tumors, I have felt unusually shaped masses in the flank made up of the displaced spleen and kidney. In women, less often in men, the right kidney may be magnified in size when felt through a thickened or distorted right liver lobe, and may simulate a tumor. On the other hand, one is frequently surprised at operation to find a tumor of the kidney much larger than clinical examination had indicated. I have had two tumors of the kidney that could not be palpated, and in 12 out of 91 operated kidney tumors from the Mayo clinic, no tumor was palpated clinically. In this group, and in small tumors of doubtful renal origin, diagnosis must be based upon cystoscopic examination, determination of renal function and pyelography. It must be remembered, however, that in nearly 25% of tumors functional tests will not show insufficiency. Very large renal tumors may be mistaken for other abdominal growths on account of lack of mobility, dislocation of other organs, disturbance of the normal relations with colon and liver, or from production of unusual symptoms, as jaundice, obstruction of the bowel, pressure on the duodenum and on the vena cava, etc. The very large renal tumors of childhood rarely cause pain or hematuria but usually their recognition is easy as other abdominal growths are rare at this age. Apart from the enormous tumors of childhood, very large cystic kidneys, or large hydro- or pyonephrotic sacs, enlargements of the kidney comparatively rarely extend across the mid-line of the abdomen or into the pelvis. At times there is definite bulging of the hypochondrium, or ribs or loin. Localized distension of veins is rarely noted. Of greatest importance in the recognition of renal neoplasms is the fact that no matter how great the enlargement or what its nature may be the rounded kidney shape is more or less preserved. Definite edges or shelves are rarely palpated. Ballottement from the flank is an important characteristic, though it may be absent in fixed kidney tumors, and may be demonstrated at times in tumors of the liver, spleen or colon. Occasionally in tumors growing chiefly from one pole the kidney may be outlined as an appendage to the main mass. Pulsation of a tumor in the flank should

suggest hypernephroma, but it may occur in aneurism or retroperitoneal sarcoma. Systolic or continuous bruits may be heard over enlarged livers and spleens as well as over renal tumors. The mobility of kidney tumors may be considerable even apart from tumors that occur in freely movable kidneys. Movement on respiration frequently occurs and even considerable excursion should not decide for hepatic or splenic rather than renal origin.

The fact that tumors of the kidney lie deep in the flank, and in their growth carry the colon in front of them, is important in diagnosis. The colon, especially on the left side, may be felt crossing the tumor, or may be demonstrated by inflation. Absolute reliance must not be placed upon this sign, as I have wrongly ruled out a tumor of the kidney, and called the mass spleen because the colon lay wholly along the anterior border. Moreover, the colon will lie across a retroperitoneal sarcoma in just the way it crosses a kidney tumor. Rarely the kinking by adhesions of a colon, crossing a kidney tumor, will cause obstructive symptoms and suggest a primary colon growth.

It is humiliating that even with care, mistakes in diagnosis still occur; mistakes occur more rarely, however, since the urologist has come to our help. In my own experience with tumors, more mistakes are made in referring a tumor of kidney origin to another organ than in assigning other tumors to the kidney. Tumors of the liver, spleen, colon and retroperitoneal structures most often cause confusion.

1. *Liver.* It has been noted above that a kidney felt through an abnormal right liver lobe, may appear much larger than normal. I have been surprised at operations for gall-bladder disease to find that a mass, thought to be liver, was really a kidney anchored low, and that the mass in the flank thought to be kidney, was really a plump right liver lobe. In certain cases of tilted liver, or of abnormally shaped or thick right lobes, the liver mass may be diagnosed as a kidney tumor. I have seen this mistake made a number of times, and have made it twice myself, though I have had the possibility well in mind for years through the experiences of Bright, Osler, Rolleston and others. We have now a most interesting woman in the University ward with enlarged spleen and liver, and a marked secondary anemia without, however, the leukopenia of Banti. When she first entered it was a question whether the anemia should be referred to Banti, to unnoticed intestinal hemorrhage, or to a mass in the right flank, possibly a kidney tumor. Despite a definite undercurrent of uncertainty about the mass it was finally decided to be a kidney tumor because of the position, size, the apparent separate mobility from the liver, and the inability to feel the right kidney. Cystoscopic examination showed normal ureters, normal urine and no diminished function on the right side. The pyelograph, however, showed a small and deformed pelvis which Doctor Hinman thought best explained by the assumption of a renal growth. With the uncertainty as to the nature of the enlargements of spleen, liver and kidney, it was thought best to

explore the abdomen. At operation the right kidney was normal, and wedged high up by an unusually plump large right liver lobe, which had been taken clinically for a kidney tumor, the pressure on the renal pelvis explaining the abnormal pyelograph; the nature of the splenic and hepatic enlargements is even yet not satisfactorily explained. Abnormal tipping of the liver may often be recognized by the unusual line of dullness above, lung resonance extending abnormally low in the axillary lines and this is further accentuated in the left decubitus. Corset liver lobes when plump, rounded and nearly detached from the main liver mass are sometimes very difficult to interpret, especially when they occur in men. X-ray plates may determine their nature, and show a separate kidney shadow; plates taken after inflation of the colon may outline liver and spleen still more clearly. Distended gall-bladders, especially when fixed by adhesions, may simulate kidney tumors, but they nearly always are more superficial, swing differently, and can be brought into relation with the liver edge.

In a number of instances I have seen hypernephromata wrongly diagnosed as liver tumors. In two cases a history of hematuria should have corrected the diagnosis. In a man seen years ago, a large hypernephroma had grown chiefly upward, tilted the liver down, and to the left, and so narrowed the cava just below the diaphragm, as to enlarge the liver generally. It is well to bear in mind that this enlargement of the liver, from dislocation and engorgement is not uncommon in hypernephromata.

2. *Spleen.* Enlarged spleens are common clinical findings in California. As a rule an enlarged spleen is easily recognized by its superficial position, direction of enlargement, edge, notches and respiratory mobility. Sometimes, however, enlarged spleens are plump, unduly movable from the flank, and lie deeply, or become tilted forward so that the edge is no longer readily felt. Sometimes enlargement is transverse, rather than diagonally downward, and inward, and one feels peculiar horizontally-placed cakes in the epigastrium. The vertically placed, elongated, rounded spleens, with nearly parallel borders are the most confusing. Apart from leukemia, splenic tumors are usually associated with leukopenia, while renal tumors, especially sarcomata, may cause high polynuclear leucocytosis. In 1905 Doctor J. M. Read asked me to see an unusual case of lymphatic leukemia. The irregular quadrilateral shape of the mass in the left flank, the rather rounded edge, the mobility from the flank and the absence of definite notches, although the edge was irregular, decided me to make the note "the mass seems more like hypernephroma than spleen, though it lies so low and the blood count is against it." This view was strengthened by finding a left-sided varicocele which the patient, a man of 72, said had appeared a year before, and had been larger at that time. A blood count showed 4,768,000 red cells, 61,000 leucocytes, hemoglobin 90%; differential count of 500 cells, polynuclears 38%, small lymphocytes 57%, large mononuclears 3.2%, eosinophiles .2%, mast cells .8%. This count suggested but was not

typical of lymphatic leukemia and, with the paper of Strauss (*Sarcomatose und lymphatische Leukæmie Charité Annalen XXIII*) in mind, a diagnosis of hypernephroma with lymphocytosis was made. Under large doses of arsenic the blood picture was unmodified, but the man became deeply and universally pigmented and developed a gangrenous zoster of the left frontal region and scalp. During this zoster, the tumor became much smaller and the edge sharper, leucocytes fell to 4,200. Death occurred a short time after, and autopsy showed a long, slightly nodular hypernephroma of the left kidney, with tumor masses in the renal vein. There were no metastases.

3. *Colon.* In tumors of the colon the history is most important. Stiffening of the bowel and fecal impaction are common and x-ray plates help greatly in diagnosis. Melena and occult blood are important signs but it must be remembered that bowel hemorrhages may occur with tumors outside the bowel and that occult blood may consistently be absent in large colon carcinomata. Massive tuberculomata of the cecum owing to shortening of the ascending colon frequently, lie high in the right hypochondrium. Frequently the normal right kidney may be separated from the colon tumor.

4. *Retroperitoneal Tumors* are not rare. They may have the same relations as renal growths, but they are usually less movable by ballotment. They may cause the same pain radiation but none that I have observed caused hematuria. They may be large, and of the exact shape of a rounded renal growth, or irregular and nodular, if springing from lumbar glands. Functional tests and pyelography are of great value in distinguishing from kidney tumors. I have seen masses of tubercular glands in childhood, retroperitoneal glands of Hodgkin's disease or lympho sarcoma in adults diagnosed as kidney tumors. The fact that large retroperitoneal growths may be syphilitic should not be forgotten. We have all unfortunately seen the massive glandular tumors in the kidney region, that develop so frequently after removal of testicle teratomata. Some years ago I made the diagnosis of a tumor, developing in the upper pole of the left kidney, or left adrenal of a man of 35. There was pain in the loin, groin and left testicle. The testicles were normal. The man became emaciated and deeply pigmented and a tumor developed deep in the abdomen about the upper kidney pole. The kidney itself was pushed down, and the lower half could be palpated, the upper half blending with the tumor. I had no hesitancy in urging operation during the early months of the disease. Fully a year later, swelling of the left testicle was noticed for the first time. It soon became apparent that this was a tumor of the testicle and not a varicocele, and that the tumor of the loin was secondary and not primary.

After an abdominal mass has been recognized to be of renal origin, it remains to determine its nature. We have to distinguish neoplasms from hydronephrosis, pyonephrosis, pyelonephritis (rarely), tuberculosis and cystic kidneys. Examination of the urine is naturally most important, so is cystoscopy, ureteral catheterization, pyelography. I know from experience that hydronephrosis and

pyonephrosis are far commoner conditions than is generally recognized. The intermittent hydronephrosis of young adults escapes diagnosis especially frequently. The pyonephrosis of tabes is often unrecognized. Multilocular cystic kidneys are likewise clinically much more common than the textbooks have us believe. They may be met with at any age, the last cases seen were men of 60 and 65. The tumors may go unnoticed until uremia occurs, may be discovered accidentally, may become infected and be marked by pyuria and fever, may be brought to notice by hematuria or acute pain like renal colic or may give dull pain in the back or vague gastric symptoms. I have seen bilateral tumors in three members of the same family and several times have seen unilateral infection of a cystic kidney. Tumor may be found only on one side, and yet the condition is nearly always bilateral, so that nephrectomy should not be done unless demanded by extreme pain or uncontrolled infection. I have seen good results from Rovsing's operation—of puncture of the cysts.

III. *General or distant signs.* Frequently in the course of a general physical examination, signs will be found that suggest the presence of an abdominal tumor, that suggest moreover that this tumor is to be sought in, or near the kidney, and perhaps that it is a definite kind of kidney tumor. The following remarks apply particularly to tumors of adrenal origin or so-called hypernephroma or mesothelioma of the kidney.

1. Pigmentation has been noted in a number of these tumors; it was general and very marked in two of my cases. It may of course occur with many abdominal tumors or with abdominal tuberculosis. Braasch has called attention to a "flushed, congested appearance which is almost pathognomonic." He regards a peculiar congestion of the bladder mucosa as quite characteristic.

2. Giantism, precocious sexual development, hypertrichosis in children should suggest adrenal tumor as well as tumors of the pineal gland or gonads. I have seen hypertrichosis in two women with hypernephroma of the kidney.

3. Arteriosclerosis, general and most marked, helped to determine the diagnosis in a boy of 14 seen years ago in the San Francisco Hospital. At autopsy no other cause was found for the vascular changes except a hypernephroma of the left kidney with metastases in lungs, glands and bones. Hypertension has been described in connection with hypernephromata. I have seen pressures of 160, 175, 180. Oschner has noted the tendency to brain hemorrhage in hypernephromata. Sippy observed hypertension in four cases, one man suffered from persistent headache until the tumor was removed. Israel, Albrecht and more recently Braasch have emphasized unusual hyperemia and enlargement of the heart and suggest these phenomena may be due to toxins entering the vena cava from the tumor.

4. Metastases are frequent and often unusual. There may be great numbers in glands, bones, liver and lungs or a single metastasis may long precede recognition of the primary tumor and lead to grave mistakes in diagnosis. Albrecht has recorded sev-

eral instances of operation for supposed sarcoma or tuberculosis of bone in which examination of the specimen showed it to be a metastasis from a hypernephroma. Kolisko has called attention to the relation frequency of brain metastases and Albrecht cites a case in which an attempt was made to remove a brain tumor regarded as primary, the autopsy showing a metastasis from hypernephroma. Spontaneous fractures or tumors of bone should always suggest a kidney tumor. Pulsating tumors either of bone or soft parts should also lead to examination of the kidney regions. Orbital or skull tumors in childhood are most commonly of adrenal origin and palpable tumors of the abdomen have been found in several cases reported by Hutchinson and Tileston. The peculiar massive enlargements of the liver in infancy associated with adrenal growths may be mentioned in this connection. It can readily be understood how the clinical picture may be obscured by the symptoms from these metastases. I have seen sudden death from hemorrhage into a large brain metastasis, girdle chest pain and compression symptoms like Pott's disease from vertebral metastases, severe pain from multiple rib fractures, persistent cough and hemoptysis from lung tumors, uremia from invasion of the vena cava and both renal veins, edema of the feet and legs from block of the cava, pulsating tumors in the mid and lower abdomen and in the right tibia, etc.

5. Varicocele, first described by Guyon, is an important symptom of renal growths. I have seen it in five cases of hypernephroma. In one case, operated upon by Dr. Terry, it was marked on the left side and disappeared after removal of the large left-sided tumor. The man did well for many months, when a varicocele developed upon the right side, marking the beginning of right-sided tumor growth. Varicocele may arise from kinking of the vein, or from pressure of the tumor, as well as from pressure by enlarged glands, or from extension of the tumor into the renal and spermatic veins. Hochenegg thinks that failure of the varicocele to empty in the knee-chest position or when the tumor is lifted up indicates permanent block of the spermatic veins by glands or tumor penetration and forbids operation.

6. *Herpes.* I have noted zoster in the distribution of the 3rd and 4th lumbar nerve roots in the thigh twice in pyonephrosis and once in hypernephroma.

We shall hear fully to-day from others of the accuracy that attends diagnosis of kidney tumors by the newer methods of examination. Clinical diagnosis as I have tried to emphasize, here as elsewhere, must be based upon a good history, careful observation and proper correlation of facts. In his book on "The Diagnosis of Abdominal Tumors" a book which can always be reread with advantage, Osler closes with a citation from Traube, which puts well the reason we fail most often, in diagnosis of abdominal conditions. "Have we carefully observed all the facts of the case? Yes. Did the art permit of a judgment on the facts under consideration? Yes. Did we reason correctly upon the data before us? No. Wir haben nicht richtig gedacht."



## MODERN DIAGNOSIS AND TREATMENT OF NEPHROLITHIASIS.\*

By WM. E. STEVENS, M. D., San Francisco.

The advance in urology during the past decade, due principally to an enlarged and improved diagnostic armamentarium, has so increased our facilities for examination that the detection of urinary calculi is comparatively simple in the majority of cases. In a not inconsiderable number, however, the characteristic objective and subjective symptoms are absent or confusing, and the findings negative or misleading. It is these cases that sometimes tax to the utmost our diagnostic resources. Notwithstanding these difficulties the number of patients operated upon following the erroneous diagnosis of nephrolithiasis, is still too large to be of credit to modern genito-urinary surgeons. The principal reason for these mistakes may be expressed in three words—insufficient preliminary investigation. While the diagnostic error in the following case was excusable, it will serve to illustrate this point.

Mrs. B., a woman 33 years of age, with a history of having passed stones, two of which were in her possession, complained of severe pain in the right lumbar region. The urine contained a moderate number of pus and blood cells. Radiographic examination disclosed two faint shadows apparently in the pelvis of the kidney adjacent to a bismuth catheter, which had previously been inserted. The kidney was exposed, but a thorough search failed to reveal stones. The cause of the shadows was not ascertained.

### RENAL LITHIASIS.

**Symptoms:** Pain. Usually located in the kidney region, is most commonly the presenting subjective symptom, being present in ninety per cent. of all patients. In 50% it is intermittent and colicky in character, and in 40% constant. It is limited to the region of the involved kidney, or referred along the course of the ureter to the bladder and genital organs, to the labium or ovary, and occasionally to the thigh, shoulder or opposite kidney. Rarely it is confined to the latter.

**Urinary disturbances and findings.** So-called silent stones may exist without pain or disturbance of micturition and with negative urinary findings; this condition is, however, uncommon. In over 80% of cases, blood, pus and bacteria are found. Pronounced frequency of urination or anuria may be present. Instances of the latter condition, verified by autopsy, have been reported in which the opposite kidney was normal in every respect; this, however, is quite unusual. Disease of the supposedly healthy kidney or the presence of calculi, here, or in the corresponding ureter, are generally found.

In view of the fact that recurrences take place

in at least 50% of cases, this factor is of diagnostic importance in patients giving a history of having passed gravel or stones or of having undergone treatment for the same. It should also be remembered that recurrence is more frequent in those past middle age and in those who have been subjected to nephrotomy rather than to pyelotomy.

**Diagnosis.** Radiography. The Roentgen ray is our most valuable aid in the diagnosis of nephrolithiasis; it is negative, however, according to Cabot's experience, in about 15% of kidney and ureteral stones. These figures vary widely according to the preparation of the patient, the skill of the radiographer, and the composition of the stone. Satisfactory plates are obtained after the administration of castor oil in one ounce doses, twenty-four and twelve hours before radiography, together with a high enema the night before and a low enema on the following morning. A liquid diet should be given on the previous day and no breakfast on the morning of the exposure. A bismuth catheter should be inserted, as it assists materially in determining the location, as well as in the diagnosis, of both kidney and ureteral stones. Radiographs should always be taken of both kidneys and ureters. Neglect of this precaution will frequently cause us to overlook calculi in the supposedly healthy organ in the presence of referred pain. Fenwick divides the lower space into an inner and an outer portion by running a line vertically upward from the center of the iliac crest. Shadows inside this line are usually intrarenal, on, or near this line in the cortex and, outside this line, extrarenal. The density of a shadow depends upon the amount of calcium salts present; calcium oxalate, calcium phosphate and the rare cystin stones are detected most readily. Regardless of their composition, stones are not well seen if surrounded by a large quantity of pus as in perinephritic abscess and some cases of pyonephrosis. Pure uric acid calculi do not cast a shadow upon the plate, but by means of pyelography their detection will at times be feasible on account of the opaque coating resulting from this procedure. Moreover, with a persistently alkaline urine, the presence of uric acid calculi is extremely unlikely, phosphates soon being deposited upon them.

**Pyelography.** In addition to aiding in the detection of stone shadows, because of the dissimilarity in density, pyelography assists in the determination of their relation to the kidney pelvis. This is of cardinal importance in deciding upon the proper operative procedure. Pyelography outlines the pelvis and individual calices, disclosing in the presence of stones, inflammatory dilatations and irregularities according to their location. These changes in outline are manifested, even if the stone be entirely cortical, especially if infection is present or has at any time existed. Brasch has called attention to the fact that a shadow overlapping the outline of the calyx is probably extrarenal, as is one lying to the side, rather than at, or near the end of a calyx, which is the usual position of a stone.

Although of decided value in the diagnosis of nephrolithiasis, pyelography is not devoid of danger.

\* Read before the annual meeting of the Medical Society, State of California, Fresno, April, 1916.

Many disagreeable and several fatal results have been reported following this procedure. I have seen one death following the use of a 25% collargol solution. Whatever the preparation used, it should be introduced by gravity through a catheter not large enough to entirely occlude the ureter, and in quantity seldom exceeding 6 cc. The capacity of the pelvis should be previously estimated with some bland liquid. I have obtained better results with a 15% collargol solution introduced in the above manner, than with the more recently advocated thorium nitrate of the same strength.

A stereoscopic examination in connection with pyelography will determine still more definitely the relation of the shadow to the kidney.

**Wax-tipped catheter.** Next in value to radiography and its adjuncts pyelography and stereoscopy, is the wax-tipped catheter. This valuable procedure has been used by Howard Kelly in women since 1895, long before the advent of the Roentgen ray. The most important improvement in the technic of its application has been advanced by Hinman, who uses an F. 10 rubber catheter as a protector to the wax-tipped catheter in its passage through the channel of the operating cystoscope. This method seldom fails to detect pelvic stones unless inaccessibly located in a dilated calyx.

**Cystoscopy** affords us a means of detecting a condition of the ureteral mouth suggestive of renal calculi. During an acute attack the orifice of the ureter is seen contracted; after the attack has terminated, it appears dilated and swollen.

**Functional kidney tests** are of confirmatory value; a deterioration of function is usually noticed in nephrolithiasis.

**Palpation.** Isreal and others have reported cases in which they have palpated renal calculi. This is seldom feasible, unless the stone is very large or the kidney displaced.

#### DIFFERENTIAL DIAGNOSIS.

The conditions most likely to mislead us in the diagnosis of nephrolithiasis are, in order of their frequency, tuberculosis of the kidney, gall stones and calcified glands. Illustrations:

A well-nourished middle-aged woman complained of pain in the right kidney region radiating toward the bladder; also frequent and painful urination. The urine from the right ureter contained pus and blood, but repeated examination failed to disclose tubercle bacilli. Two small, well-defined shadows were found on radiographic examination. Exposure of the kidney showed two areas of caseation in the lower pole.

Another patient complained of attacks of pain resembling typical stone colic. Radiography disclosed a well-defined shadow located in the region of the right kidney pelvis. Operation proved this to be a tuberculous lymph gland.

**Tuberculosis.** While the tubercular putty kidney may be frequently diagnosed radiographically by the density, irregularity and size of the shadow, scattered tubercular foci located in the renal parenchyma producing shadows of more or less density, according to the amount of calcium salts present, are usually impossible of differentiation. A care-

ful study of the radiogram will, however, often show an irregular washed-out appearance, suggestive of tuberculosis.

Pyelography frequently reveals in these cases an irregular dilatation of the calices most noticeable at the apices, and, in advanced cases, an irregular, moth-eaten appearance of the entire pelvis. Dilatation of the ureter due to inflammation or stricture is frequent and is followed by dilatation of the pelvis. Cystoscopy will often reveal an abnormal ureteral orifice or ulcers of the bladder wall adjacent to the ureter, either of the corresponding, or of the opposite side. Tuberculin tests are of value in the presence of a combined focal and general reaction. Finally, it must be remembered that both conditions may co-exist.

Repeated microscopic examinations of the urine and inoculation of guinea pigs will usually result in the detection of tuberculosis, if present. A thorough physical examination together with the consideration of the general condition and symptoms of the patient are of utmost importance.

Gall stone shadows are usually dense at the periphery which is composed of lime salts, and indistinct in the center which consists of cholesterine. They are usually multiple, lie close together and nearer the median line. Pyelography will demonstrate the distance from the pelvis laterally and will also show the outline of the pelvis and calices, which are normal in cases of gall stone or other extrarenal shadows. Stereoscopy will determine the distance from the pelvis anteriorly or posteriorly.

#### TREATMENT.

In considering the treatment of nephrolithiasis there are three factors that should constantly be borne in mind. First, that calculi gradually increase in size, pressure atrophy of the renal parenchyma resulting if the stones are large. Secondly, infection will eventually occur, and possible hemorrhage must also be considered. Hydronephrosis due to occlusion of the ureter is not uncommon. Lastly recurrence takes place in 50% of all cases, this figure being slightly increased following nephrotomy. Prior to middle age the percentage is greater than after this period.

**Functional kidney tests** are of importance in determining the indications for treatment by disclosing a deterioration of function on the affected side. It has been my practice following catheterization of the ureter to use the urea, phenolsulphonphthalein and phloridzin tests simultaneously, thereby lessening the necessity for more than one cystoscopic examination, that is, when the results correspond, as they usually do. The quantitative sugar estimation following the intravenous administration of phloridzin, a procedure which I have followed during the last few months, impresses me as the most valuable of these tests. When catheterization of the ureters is impossible or undesirable, the indigo-carmin test is of great value. Total function is satisfactorily ascertained from urine collected for two hours after the intravenous injection of phthalein of phloridzin.

**Medical treatment** occupies a position of minor importance in the therapy of nephrolithiasis. Pro-

fuse diuresis may have a tendency to flush out small stones, and drugs rendering the urine alkaline or acid over a considerable period of time might have a tendency to disintegrate the calculi, depending upon their composition.

**Surgical Treatment.** In aseptic cases where symptoms are absent or of minor importance the decision for or against operative procedure will depend upon the age and general condition of the patient and the position of the stone in relation to the kidney pelvis and consequently the possibility of its removal by pyelotomy.

The presence of anuria should serve as an indication for immediate operation. If no obstruction is found in the suspected kidney or ureter or if the kidney appears unable to fulfil its function satisfactorily, the other kidney should also be exposed. Decapsulation will often suffice in a kidney reflexly inactive. This fact, however, does not preclude the necessity for exploration of the kidney and the corresponding ureter.

Since its introduction by Henry Morris, in 1880, until quite recently, nephrotomy has been the operation of choice with urologists for the removal of kidney stones. Objections to this method are: (1) The frequency of severe primary and secondary hemorrhages. (2) The destruction of the vascular supply and the renal parenchyma. (3) The danger of overlooking calculi. (4) Septic nephritis and perirenal infection extending in some cases to the peritoneum. (5) The liability to fistula of long duration. The advantages of nephrotomy are: (1) Better drainage in the presence of infection. (2) The possibility of its performance without delivery of the kidney in the presence of a short pedicle or extensive adhesions. (3) The comparative ease of extraction in the presence of large or branched stones and in calculi scattered through the parenchyma.

A longitudinal incision beginning 1 cm. posterior to the convex border, causes the least destruction of blood vessels and renal tissue. With the knowledge obtained from improved radiographic technic and functional kidney tests, complete bisection of the kidney is rarely necessary, a small incision usually sufficing. The patency of the ureter having been determined, the cut surfaces should be carefully approximated by through and through sutures, a drainage tube being inserted if infection is present.

The advantages of pyelotomy are: (1) Infrequency of primary or secondary hemorrhage. (2) The possibility of a thorough bimanual exploration of the kidney, and (3) A shorter convalescence. The disadvantages are obvious in the presence of a short pedicle, pronounced infection, numerous adhesions and in stones distant from the pelvis.

**Pyelotomy**, although advocated by Czerny in the same year that nephrotomy was introduced by Henry Morris, has only recently become popular. It is seldom productive of serious results when performed in the proper manner. The kidney having been delivered into the wound, an incision is made into the posterior wall of the pelvis between two traction sutures. With a finger in this in-

cision, and the other hand externally, a very satisfactory exploration is feasible. This incision should not approach too near the uretero-pelvic junction, on account of the danger of stricture. It is likewise inadvisable to extend it into the renal parenchyma on account of the large size of the peripelvic branches of the renal arteries and veins and the liability of serious hemorrhages resulting therefrom. Nephrotomy would be preferable, in addition to pyelotomy.

**Nephrectomy.** Primary nephrectomy is without doubt the operation of choice in cases of advanced calculous pyonephrosis with little functioning tissue in the presence of a healthy kidney on the opposite side. In cases of lesser severity, however, the operation of partial nephrectomy is to be considered. If involvement of the opposite kidney coexists it is, in my opinion, imperative. The danger from a focus of infection which it is usually impossible to completely remove, is less than that from renal insufficiency. The following case will serve as an illustration of the advantages of this type of operation. I have not been able to find another case in the literature where a partial bilateral nephrectomy has been performed in the presence of an advanced bilateral calculous pyonephrosis.

J. J., an Italian boy, 19 years of age, barber by occupation, came to me in July 1912 complaining of pain, usually dull, but at times quite sharp, in the thigh and left hypochondriac region. He also suffered from intestinal flatulency, occasional pain in the epigastrium, sour stomach and dryness of the mouth. He had been treated for gastritis, malaria, rheumatism, etc. No subjective urinary symptoms were present. The urine contained a large number of pus and a few blood cells. Cystoscopy showed patulous ureters, injected trigone, and prominent intraureteral ligament. The ureters were catheterized and cloudy urine containing a large amount of pus and a few blood cells obtained from both kidneys. Bacteriological examination showed the colon bacillus. Functional tests showed somewhat low values on both sides, particularly on the right. Blood cryoscopy showed satisfactory absolute kidney function. Radiography showed eight typical stone shadows on the right, and six on the left side.

The right kidney, after being freed from extensive adhesions, was found to consist principally of a large pus sac, from which, on incision, serous fluid and calculi escaped. The center of the sac contained tissue apparently healthy which it was decided to preserve on account of the known pathological condition of the opposite kidney. Accordingly as much of the diseased portion as possible was removed together with a large part of the greatly dilated pelvis. The patient rallied well and left the hospital five and a half weeks later in fairly good condition. Three weeks later he again entered the hospital for operation on the other kidney. The urine from the right side now showed much less pus than that from the left. Two days later, two months after the first operation, the left kidney was exposed. It also represented a large sac, from which a large amount of muco-purulent fluid escaped and six calculi were removed. The walls were resected in the same manner as the opposite kidney. The patient did not rally as well as from the previous operation, but in eight weeks the fistula had closed and he returned to his work at which he has continued uninterruptedly up to the present time. The urine still contains pus. Radiographs taken a few days



ago show a small shadow suggestive of a calculus in the lower pole of the right kidney.

**After-treatment.** The after-treatment of urinary calculi is of extreme importance in preventing the formation of new stones, or an increase in size of existing ones, the removal of which is contraindicated.

In calcium phosphate stones, milk, eggs, fish, beer, wine and fruits are to be avoided on account of their calcium content. Drugs rendering the urine acid, as sod. benzoate, or acid sodium phosphate should be given, and large quantities of water taken. In uric acid stones, the diet should consist principally of carbohydrates, vegetables and fat. Alkalis are indicated internally, also plenty of water. In oxalic acid stones, increase the calcium and decrease the acidity. Very few carbohydrates should be given, on account of their tendency to fermentation which increases the formation of oxalic acid.

The rare cystin stones are present in those individuals who have lost the power of oxydizing the sulphur containing constituent of their protein, consequently intake of the latter should be greatly restricted.

#### ACUTE DILATATION OF THE STOMACH. A REPORT OF SIX CASES, THREE OCCURRING DURING ANESTHESIA.

By FRANK B. REARDAN, M. D., Turlock.

In 300 anesthetics, covering a period of four years, I have encountered four cases of acute gastrectasis, two occurring during anesthesia. To these, two more cases observed, may be added, one of which occurred during anesthesia.

The most important symptoms are vomiting, abdominal distension and collapse. Thirst is also an important symptom. Pain is variable. Hiccough, cyanosis, giddiness, and syncope are rarer symptoms. The stomach contents are usually watery, at first yellowish or greenish, later on becoming brownish, or black, from admixture with blood. In five of the cases reported here, the contents have been black or brownish from the first, being typically coffee-ground in character. As a rule bile is present, and a varying amount of hydrochloric acid.

Borchgrevink mentions the cases as falling into one of eight groups. His paper is the most recent and thorough covering of the literature, that I can find. It seems strange, however, in his review of 144 cases of acute dilatation, no mention is made of the condition occurring during anesthesia. His groups are: Post-operative; During acute illness or convalescence; During chronic illness; Disorders or deformities of the spine; Overloading of the stomach; Blow on abdomen; Confinements; Without apparent cause. To these

groups I would add: During anesthesia; to cover some of the reported cases, as well as the three herein reported.

Paralysis of the stomach is the oldest and most generally accepted explanation for the condition. Primary mechanical occlusion of the duodenum with secondary dilatation of the stomach, and primary gastric dilatation, whether neuro- or musculo-paresis, and secondary mechanical occlusion of the duodenum, either by direct pressure of the stomach on the duodenum in its passage in front of the spine, or by secondary arterio-mesenteric compression brought about by the distended stomach's pressure on the small intestines, are two other important hypotheses. Albrecht held that the dilatation was due to a primary constriction of the duodenum by the superior mesenteric artery, through dragging on the root of the mesentery. Other factors, such as a pre-existing chronic dilatation of the stomach, gastric hyper-secretion, spastic occlusion, and a simultaneous vulvular kinking of the pylorus and cardia have been urged as the primary cause.

Most of the causes given are easily disproven by a clinical consideration of the cases studied, and the etiological question is to be decided between a paralysis of the stomach, and arterio-mesenteric compression. Von Haberer differentiates between acute dilatation of the stomach, and what he terms acute arterio-mesenteric ileus. The latter gives practically the clinical picture of a high intestinal obstruction. The mechanics of this condition are as follows: The band formed by the superior mesenteric artery lying across the transverse portion of the duodenum, is pulled upon by that portion of the small intestines lying in the pelvis. The duodenum is now compressed between the artery and the spine, the pull upon the mesentery having obliterated the angle between these two structures. Now, either the stomach empties itself by repeated vomitings, or the angle of the esophagus with the cardia may form a valve, preventing the stomach from emptying, and leading to dilatation.

For this condition to occur, the bowel must be empty, and have a fairly long mesentery, long enough to reach into the pelvis, so that by its weight, traction would be exerted upon the superior mesenteric artery.

In favor of the paralysis theory is the clinical evidence of the appearance of acute dilatation in disorders of the spine, illnesses of the nervous system, severe injuries, and the influence of anesthesia in causing paralysis. A short review of the few cases in this series will show, at least the clinical evidence, of a predisposing cause in anesthesia.

Case 1. Male, age about 50. Acute dilatation of the stomach about 14 hours after laparotomy. Ether anesthesia. Patient in extreme collapse when first seen. Died.

Case 2. Female, age 46. Acute dilatation during abdominal Caesarian section by Dr. E. A. Julien of Turlock. Very little collapse, violent retching but no vomiting on the table. Stomach washed out immediately, large quantity of coffee-ground material in washings. The patient did not have any after effects, not even vomiting after operation, and had a normal convalescence, although at

the time the dilated stomach filled the entire abdominal cavity.

Case 3. Female, age 60. Acute dilatation during operation for varicose veins of leg by Dr. P. N. Jacobson of Turlock. Ether anesthesia. Extreme distention of the abdomen, violent retching, with but slight vomiting, and extreme collapse occurred on the table. The stomach was washed out immediately, and the typical coffee-ground material noted again. The anesthetic was then continued until the completion of the operation. Convalescence was delayed, the patient being very sick for a week following operation.

Case 4. Female, age 58. Acute dilatation occurring six hours after appendectomy by Dr. Jacobson. Ether anesthesia. This case before going to the hospital had drunk very heartily of fresh milk. This was noticed at the completion of the operation, during gastric lavage, which is practised as a routine. Great chunks of curdled milk were noted, but the washing was, unfortunately, not thorough enough, due to the patient awakening too soon. When first seen by me after operation, she was in extreme collapse. She was treated by saline hypodermoclysis, gastric lavage, and the prone position. Recovery took place in three days.

Case 5. Female, age 59. Ether anesthesia. Acute dilatation four days following abdominal section for inoperable carcinoma of pancreas. Patient's abdomen before operation greatly distended by ascites, which was relieved by operation. Patient in bad shape for over a week, although repeated stomach washings and prone positions brought relief. Typical coffee-ground material noted in this case.

Case 6. Male, age 22. Ether anesthesia, by Dr. Wilson. Operation for wiring tibia for non-union, by Dr. Jacobson. Acute dilatation about the end of anesthesia. Extreme collapse for the time being. Thorough stomach washing brought immediate relief. Coffee-ground material noted in this case.

From a personal communication with Dr. E. A. Julien I have knowledge of another case of acute dilatation which occurred during anesthesia, while the abdomen was opened.

The treatment of this condition is repeated stomach washings, and placing the patient in the prone position, with a pillow under the pelvis. The results with the latter method are often miraculous, the patient noticing relief immediately. In cases 4 and 5, I noticed this effect, especially in the latter case, where the patient would ask to be turned back, after trying some other position for a short while.

Hypodermoclysis has been useful in supplying the body with fluid to make up that lost by secretion into the stomach. In case 4 it was used, along with the washings and posture, with decided benefit.

The striking benefit obtained from posture, is decided evidence in favor of arterio-mesenteric compression, as a cause of, or a factor in, acute dilatation. On the other hand, the paralyzing influence of the anesthetic can not be dispensed with, in this series, at any rate.

Caution against too thorough emptying of the bowels before operation, so that the bowels would be completely empty, and against filling the stomach, either with fluid or food in too great a quantity after operation, has been urged as a prophylactic measure. I would urge gastric lavage at the end of every anesthesia, as a prophylactic measure of great value. Had case 4 been properly

washed out, so that the stomach would have been empty, instead of being filled with curdled milk, the condition, it is reasonable to suppose, would have been prevented.

Women are more prone to acute dilatation than men, in the proportion of 60 to 40. In regards to age, 75% of all patients reported are between 10 and 40 years of age. The last five cases reported gave me the chance for close observation, either as anesthetist, consultant, or surgeon. Of those, four are women, averaging, however, well over 50 years of age.

The mortality in Borchgrevink's series of 144 cases is 54.1%. He reports Conner giving a mortality in 1907 of 72.5%, and Laffer in 1908, giving 63.5%.

These records include both medical and surgical treatment. Surgery has proven a failure, with a very bad prognosis. In untreated cases the prognosis is also extremely bad. In 23 cases reported by Borchgrevink, treated surgically, 18 died. In 31 cases treated medically, he reports 29 deaths, with one case cured by apomorphine, and one by hypodermoclysis. In 48 cases treated by the stomach tube, 24, or 50%, died, while in 26 cases treated by posture, only 3 died, or about 12%. The striking benefits of postural treatment, in this dangerous condition, is evident, by a comparison of his tables.

In case 1, which died, postural treatment was not attempted. This case happened while in my interne year, and helped me to realize the severity of this condition. In case 2, stomach washing at the time of operation was sufficient. In the remaining 4 cases, treatment consisted of stomach washings plus the prone position, and recovery took place in all four cases.

Three interesting cases are reported last year, two by Luckett, and one by Mayoral, in which acute dilatation occurred during laparotomy, and in all the cases the major feature was the expulsion of enormous quantities of gas, without any fluid being obtained, when the stomach tube was passed. Luckett attributes the acute dilatation in his two cases, to the gulping of air into the stomach, with the resultant distention. All three cases made an uneventful recovery after stomach washing. Crandon and Ehrenfried give an account of two cases, one in their surgical practice, and one reported by Torbet, of acute dilatation during operation for abdominal Caesarean section. No details are reported, however.

In my three cases noticed during anesthesia, coffee-ground material was noticed, in the last case giving the clue to the condition before any other symptom. Gas, while present in all cases, was hardly a leading symptom. In case 4, overloading of the stomach before operation, was undoubtedly a strong factor, together with the anesthetic, in bringing about the dilatation.

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**MERCURIALIZED SERUM INJECTIONS  
IN SYPHILITIC NERVOUS DISEASES.\***

By H. G. MEHRTENS, M. D., San Francisco.

The intradural treatment of syphilis of the nervous system has received a constantly increasing amount of attention since the publication of the results of Swift and Ellis. Even before the efficacy of that method could be finally settled, the scarcity of salvarsan made its use almost prohibitive. Therefore, in July, 1915, in the Neurological Clinic of the Stanford Medical School, we began to treat a series of cases using the Byrnes method of mercurialized serum injections. The following is a preliminary report of that work (thirty cases—190 injections), to be followed by later observations of these cases and a comparison of the results of the Byrnes method with the Swift-Ellis technic and the combined method.

The material used was particularly fortunate in that most were old clinic cases that previously had been given very thorough treatment with salvarsan and mercury, with little result. The fact that these cases had treatment by other anti-leuetic methods eliminates one of the factors of uncertainty from our results. The fact that our series includes paresis (7 cases), tabes (18 cases), cerebro-spinal lues (5 cases) shows the value of this treatment in a wide range of conditions.

We made no effort to select favorable cases for treatment—first because we were anxious to note its effect upon all types; secondly because, while early cases always responded more favorably to treatment, an occasional good result would occur even in apparently hopeless cases.

In the technic of the treatment we followed the original Byrnes description.

As far as the inconveniences, complications and dangers of the method are concerned, we had no fatalities, indeed no alarming symptoms. Most of the reactions have been quite severe, especially when compared with the Swift-Ellis injections. The temperature ranges from 99 to 103 F, depending partially upon the amount of Hg injected. Pains in the back and legs were almost invariable, often being severe enough to require morphine for their control. Headache, nausea and vomiting were not unusual. Two of our cases exhibited clonic contractions of the muscles of the back and legs. We had no incontinence of the sphincters develop, nor motor paralysis—although a paretic developed a temporary hemiplegia about ten days following his dismissal from the hospital. In about 40% of the cases albumen and casts developed in the urine, especially when the mercury was pushed to the point of toleration. In fact, we felt convinced that some of the nausea, headache and malaise that developed when the treatment was pushed too rapidly might well be due to the toxic effect of the mercury upon the kidneys. Clear serum seemed to cause less of a reaction than sera in which there still remained some hæmoglobin. Heating the serum at 56 degrees C. for one hour instead of thirty minutes seemed to reduce the severity of the reaction somewhat.

\* Read before the annual meeting of the California State Medical Society, Fresno, Cal., April 20th, 1916.

Gradually increasing the bichloride of mercury from 1/100 gr. at the first injection to 1/25 in the later injections and increasing the dosage only as the reaction warranted it, is probably responsible for the lack of some of the unfavorable complications in this series. In ten cases we were unable to find a trace of mercury in the spinal fluid two days following an injection. So we feel that in cases that stand injection well, the treatments may follow closely upon the subsidence of the previous reaction. In cases in which the injection is followed by loss of weight and appetite with great weakness, especially in elderly people, a ten-day or even longer interval may be desirable—the urine being watched closely.

In order to estimate the results of this treatment we tried to find out: First, the subjective feelings of the patient. This we did by asking them to answer a printed set of questions. Seventy-five per cent. of the patients claimed to be improved, in one way or another, following the treatments. Allowing for the hope that a new remedy is bound to inspire, these patients showed more than their share of cheerfulness. This was frequently commented upon by the nurses who took care of them. In 20% of the cases this improvement was remarkable. Moreover, a large proportion of the patients paid something for their treatments, making every effort to have them continued.

The symptom of pain was especially ameliorated by the treatment. Lightning pains frequently subsided entirely. Headaches, especially in cerebro-spinal lues, were influenced very early. Girdle pains were much more resistant, persisting long after the pains in the legs had disappeared. Gastric crises were unfavorably influenced in many cases. Each treatment seemed to stir up another attack—although, it must be admitted that the crises were much less frequent following the treatment.

The ability of the patient to go back to a self-supporting existence seems a fair gauge of improvement. So far, nearly 45% of the patients treated are working full time.

Among the objective findings we considered:

Weight: nearly every patient lost weight following an injection. The average loss was three pounds, although some of the cases with gastric crises lost as high as ten pounds. Most of the patients would regain their weight in about ten days. About 35% of the patients showed a gain in weight following a series of six injections, after an interval of fifteen days with no medication. Three patients registered a large gain in weight up to twenty-two pounds in five injections. However, this was just as unusual as the rapid loss of weight.

In the physical examination, the reflexes that were found absent upon the first examination remained absent upon subsequent examinations following treatment. Areas of anaesthesia cleared up in about twenty per cent. of the cases exhibiting it. However, shifting of the areas of anaesthesia was not unusual, even without treatment. The Romberg sign and ataxia were definitely improved in about the same per cent. of cases. In the five



cases showing retinal changes, two were entirely uninfluenced by treatment, two were sufficiently improved to go back to rough work, one case made a brilliant recovery to normal vision.

The spinal fluids, in general, showed the pleocytosis to be diminished progressively, not uncommonly reaching normal in five to eight treatments. The Nonne and Noguchi tests steadily diminished in intensity. The Wassermann test seemed to be influenced more slowly, at times lagging far behind the clinical improvement. In fact, in only five cases were we able to change a positive to a negative reaction. However, in 90% of the cases there was some reduction in the strength of the reaction. The Lange test was even more difficult to change to a negative reaction.

As to the relative efficacy of the treatment in the different forms of syphilis of the central nervous system: the results in paresis were poor. Four cases grew steadily worse, two remained stationary, one only appears to be arrested. In tabes the results were much more satisfactory. Symptomatic improvement was the rule. The majority returned to work with lessened pain and ataxia. Cerebro-spinal lues gave the best results. Of the five cases every one returned to work. Headache and cranial nerve involvement were improved early in the treatment.

Space allows only a summary of a typical case of each group.

Paresis (treated with a poor result).

A. H., 36,605, an American molder, age 46, giving a history of chancre 23 years ago and a "nervous breakdown" about eighteen months ago, treated by salvarsan and mercury. His pupils were quite sluggish, reflexes exaggerated, speech blurred, tremor of the tongue and hands. The Wassermann in the blood, spinal fluid, Nonne and Noguchi tests were positive. Cell count fifty lymphocytes. Lange positive. After treatment with five injections, extending over three months, the physical examination remained the same. The Wassermann in the spinal fluid was still positive, cells were reduced to seventeen, the Nonne and Noguchi still positive. Mentally the patient was much worse, now had delusions of grandeur and at times of persecution. Had to be committed to a state hospital.

Paresis (treated with a fair result).

J. H., 34,457, German bookkeeper, age 34, giving a history of chancre twelve years ago and a "nervous breakdown" about two years ago, treated with salvarsan and mercury. His pupils were quite sluggish, reflexes exaggerated, speech blurred, tremor of the tongue and hands. The Wassermann in the blood and spinal fluid, Nonne and Noguchi were positive. Cell count is fifty-five lymphocytes. After nine injections, extending over an interval of five months, the physical findings remained the same, except for a marked loss of tremor. Patient returned to work—the speech is not quite normal, is calm and cheerful. The Wassermann in the fluid is reduced in intensity, cells only three per cu. mm. The Nonne and Noguchi barely positive.

Tabes (treated with a good result).

J. F., an Armenian tailor, age 40, giving a history of a chancre eight years ago, well treated with mercury and salvarsan, complained of numbness and cold in the legs and some dizziness. He showed sluggish pupils, absent patellar and achilles reflexes, hyperaesthesia to cold. The Romberg was positive, with marked ataxia. The Wassermann in the blood, and spinal fluid was positive, as were the Nonne and Noguchi tests. There were six lymphocytes per cu. mm. Seven injections,

over a five-months interval, saw him back to work, quite cheerful, with no pains in the legs and much less ataxia. The Wassermann in the fluid was now negative, the cell count was now six cells per cu. mm. The Nonne and Noguchi were questionable.

Cerebro-spinal lues (treated with a good result).

F. I., German baker, age 35, had a history of failing vision, headache, and malaise treated with five injections of salvarsan plus mercury. His pupils reacted very slowly to light—there was a marked optic neuritis and choreoditis. The Wassermann was negative in the blood but quite positive in the spinal fluid. The cell count was 175 cells per cu. mm. Four injections entirely cleared up his headache and sent him back to work. The fundi were reported normal. The Wassermann in the spinal fluid became normal, the cell count was reduced to six cells, the Nonne and Noguchi were negative.

In conclusion it can be said that the reactions following the injections have been severe in some cases but no alarming symptoms have developed. The majority of the patients have been subjectively improved, with increased ability to work. Ataxia was lessened but the reflexes were not regained. The spinal fluid showed lessened pressure, decreased cell count, reduction in the intensity of the globulin tests, with a tardy reduction of the Wassermann reaction. Paresis, with the possible exception of very early cases, responds poorly to this treatment. Tabes is frequently symptomatically benefited. Cerebro-spinal lues responds excellently to treatment.

## THE ECONOMIC IMPORTANCE OF THE WELL POISED PERSON.\*

By HARRY LESLIE LANGNECKER M. D., San Francisco.

The purpose of this paper is to emphasize the importance of the correction of the mechanics of the human body in the treatment of disease. In most of the cases, especially those of a chronic nature, which come to the general practitioner, and more often to the orthopedic surgeon, either directly or indirectly, the anatomy or physiology is faulty.

It has been within a very recent period that definite regional anatomical knowledge of the human body has been acquired. The regional anatomy and the relation of posture to the proper functioning of the various organs, have been most thoroughly investigated. The facts set forth by Goldthwait<sup>6</sup> and others concerning the influence of posture on the efficiency of the human body, can readily and satisfactorily, be demonstrated, by any physician.

The normal individual is one whose anatomical structure is correct. There exists no defect in the bony or muscular structures, for the work of weight bearing. There is no body strain. The various organs perform their functions most efficiently. Such individuals, who are leading a perfectly hygienic life, are few in any community. The vast number of persons, those who we are constantly called upon to treat, make up to a large extent the field of chronic medicine. From an anatomic standpoint, these last mentioned humans may be placed in definite groups. These groups or types represent deviations from the nor-

\*Read at the State Medical meeting at Fresno, Cal., April, 19, 1916.

mal anatomical type.<sup>3</sup> On the one side the lean, the long and slender, or the so-called carnivorous type. On the other side the fat, the short and heavy-set, or the so-called herbivorous type.

That food is an essential factor in the arrangement of the anatomy of the alimentary tract of these different types of humans must be recognized.<sup>3</sup> In a general way, it may be said that certain articles of food are necessary for the improvement of the various types. For instance, the carnivora develop better on a largely meat diet, the herbivora on a mostly vegetable diet.

In the type of human beings coming under the carnivorous division, there are many striking characteristics. The entire figure is lighter in every way, with slender skeleton and minimum amount of fat. The individual is either small and delicate in make-up or tall and lean. The head is proportionately large with narrow face and jaw. The hair is abundant and often grows on parts of the body where it is not usually found. The ears are large and prominent, palatal arch is high, adenoid and tonsillar tissue apt to be excessive. The trunk is longer and narrower than that which is considered normal; the increased length being chiefly in the lumbar region. The ribs are long, with marked downward inclination of the lower ones, the tenth rib is almost invariably free. At times, in a standing position, the lower ribs may touch the upper portion of the ilia. The spine is smaller in size than normal and very flexible, the lumbar vertebrae resembling the dorsal vertebrae in shape; the vertebral body being about the same width laterally as anterior-posteriorly. In the lumbar region is frequently found six vertebrae, with the full number in the sacral region, which probably accounts for the greater proportionate length of the body. The transverse processes are small and short, the articular processes usually flat. These formations tend to make a very flexible spine and it is from this type of individual that we get the acrobats and fancy dancers. The chest is of fair size, although its organs are smaller than so-called normal. The stomach instead of being pear-shaped, is long and tubular; its attachments are less firm, so that the possible downward displacement in standing is much greater than normal. Instead of the usual 20 feet of small intestine, we find only 10 or 15, with thinner walls and smaller lumen. In the standing position, the intestines are almost entirely in the upper pelvis or lower abdomen, due to the mesentery being longer than normal; in which case the entire colon lies below the crests of the ilia.

The transverse part of the colon is usually attached to the stomach, which means that it will be found below the position of the stomach even though the stomach may have its lower border in the pelvis. In this type, the appendix is usually well developed, which partly explains the very common occurrence of appendicitis in the slim thin individual. Retroperitoneal fat is scarce, hence palpation of the flanks is easy. The kidneys

are naturally mobile; the liver, rather loosely attached and smaller than normal.

In this kind of anatomy, the scaphoid type of scapula is found. The muscle fibers are long and slender. The blood pressure is low. The extremities vary in length, always proportionately long. The arms, legs, hands and feet are slender and loose-jointed; characterized by tapering fingers and high arches. At times there is an accumulation of fat in various parts of the body. This is not common; as it usually develops rapidly and may disappear as quickly. Such fat is soft and generally suggests poor health.<sup>6</sup>

Figures I, II, III exhibits prominent peculiarities of the carnivorous type.

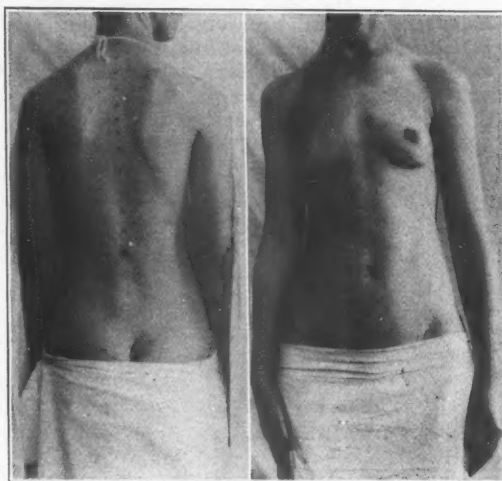


Fig. 1.

Carnivora group. Constant tendency to faulty postures owing to relaxed joints. Hypotonicity of muscles and ligaments. Poor chest development. Visceroptosis.

The herbivorous type is in marked contrast to the carnivorous type which I have just described. The body is built on much heavier lines throughout. The skeleton is large and heavy. The muscle fibers are coarse and oval. There is a superfluous amount of fat, containing much connective tissue; so that the flesh instead of being soft as in the carnivorous variety, is firm and hard.

The skin is certainly thicker and less delicate. The hair is less abundant and falls out earlier in life, which probably accounts for so many of the bald heads among fat people. The contour of the head is more rounded, with broad face and jaw. The ears are proportionately small and would not be considered prominent. The short neck with the thick broad shoulders must be noted. The chest is larger both in the anterior-posterior and the lateral diameters than normal. The diaphragm is high, the costal border is formed in a broad angle, rarely less than 90 degrees and sometimes more. The 10th rib instead of being free as in the carnivorous type is, as a rule, attached to the conjoined cartilages in front. The last two ribs are relatively short. Whereas in the carnivorous type the lumbar region is long, here it is short with frequently one less lumbar vertebrae.

Having only four lumbar vertebrae partly accounts for its shortness, and partly it is because the sacrum is set so well down between the wings of the ilia.

The abdominal cavity is correspondingly large, being both broad and deep. The stomach is large and of the usual pear-shaped kind. The intestines are thick-walled and bulky. The small intestines often measure as much as 25 to 38 feet, which is an excess of some 5 to 15 feet longer than normal. The large intestine is equally large and long, ranging from 5 to 8 feet in abnormal length. The added length is found in the longer transverse portion and in the sigmoid. The liver is large and placed well up under the diaphragm. There is plenty of abdominal and retroperitoneal fat, so that the kidneys are held well in place and the sympathetic ganglia are well protected.

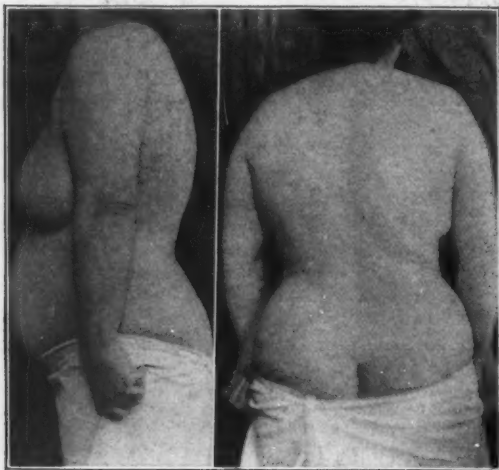


Fig. 2.  
Herbivora type—exaggerated. Often perplexing problems to treat.

On account of this type of humans being so much more heavily and strongly built, the joints are noticeably less flexible. The spine is broader and the contour of the vertebrae are less smooth. The deviation from the normal is especially seen in the lumbar region. The lateral diameter of the vertebral bodies are considerably greater than the anterior-posterior. The articular processes are strong and large and invariably of the crescentic shape. The transverse processes are unusually long and broad, frequently impinge on the upper portions of the ilia or form an articulation, the lumbo-sacral transverse articulation, with the top of the sacrum. The long and broad transverse processes upon the lumbar spine produce the rounding of the lower back. Apparently this formation furnishes attachment for the many coils of intestines.

The blood pressure in this type is higher than normal. The extremities may vary in length but they are always heavy. Large legs with straight knees, feet thick and broad, low but strong

arches, hands with short stubby fingers, these points are readily observed.<sup>6</sup>

Figure II presents characteristics of the herbivorous type.

In children, most frequently of the carnivorous or the subnormal grouping, postural disturbances show either some bony or some muscular defect, or some unequal weight distribution. It is not until the child begins to walk that such conditions are observed, and then very frequently, involvement of the bony or muscular structure of the back or lower extremities. Such defects may increase and become fixed; thus producing, in a short time, a cripple, or remaining insignificant, and often unobserved, gradually develop a number of secondary deformities, which eventually impair body efficiency.<sup>12</sup>

Figure III readily recall to mind the poorly nourished, delicate, abnormally developing child so frequently brought to the physician for treatment. Could it be expected that such devitalized and distorted human beings would be able to combat and to overcome the many diseases of childhood?

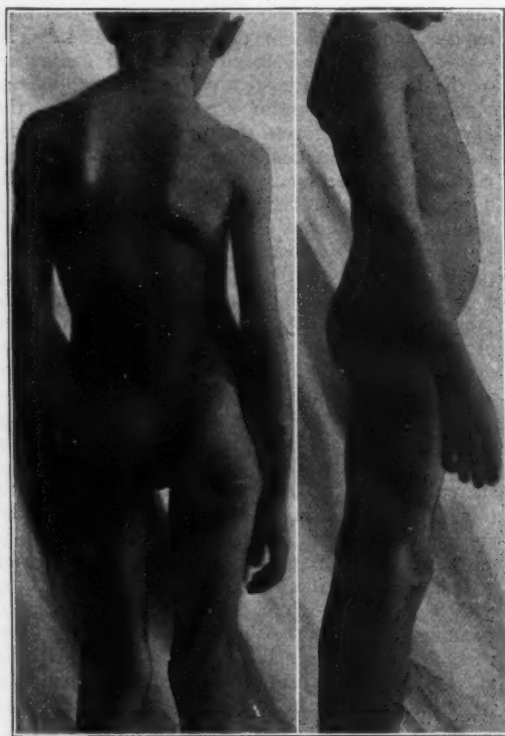


Fig. 3.  
A type frequently seen. This condition hinders proper development and increases the tendency to pathological changes.

The significance of the foregoing facts is plain. To improve the body potential, or to correct strain resulting from certain postural defects, is largely a problem in mechanics. It means that in the treatment of pulmonary diseases, development of the chest should also be considered, so that every



possible usable lung space may be obtained. In cardiac cases the position should be such that the heart will have the least work to do.

In visceroptosis<sup>12</sup> and other gastro-intestinal conditions,<sup>7</sup> endeavor should be made to readjust abdominal support, so that the organs will be as nearly normal as possible.<sup>11</sup>

Before discharging obstetrical patients, instructions should be given in methods for re-toning abdominal muscles and the ligaments holding together the pelvic girdle, as well as improving the general vitality.

In faulty posture due chiefly to defective supporting structures, complete correction must be made of all the defects.<sup>10</sup> For instance, where both hip and foot are involved, it is not sufficient to treat the foot condition alone; the hip must also receive attention.

In epilepsy, the anemias,<sup>8</sup> disturbances of the thyroid, obscure malfunctioning of certain ductless glands, and particularly the vascular system,<sup>4</sup> favorable results are being obtained, by the employment of special postures, in addition to the most efficient scientific methods of treatment. If this is so, it is evidently brought about by the readjusting the various organs to their normal anatomical positions, thereby assisting in their normal physiological functions.

In the industrial world the individual should be selected according to the anatomical type best fitted for the special kind of work he is to do, so that he will prove most efficient both to himself and his employer.<sup>1, 5, 9</sup>

A great responsibility rests upon those who have the immediate direction and education of our school children.<sup>2</sup> The latest and best methods should be employed in searching out physical impairments.<sup>14</sup> The early correction of these defects should be instituted at once and the treatment of the cases rigidly and faithfully continued until the best possible cure has been obtained.

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#### FRACTURES IN WAR TIME.\*

By LEO ELOESSER, M. D., San Francisco,

In complying with the kind invitation of Dr. L. L. Stanley to talk to you on some topic from military surgery, I have chosen the subject of fractures as being one of more general interest.

The material of a military hospital is, thank God, very different to that seen in a civil practice. The fractures are much more severe than those that we meet in our daily work. Still the treatment of compound fractures remains the same in peace or war, and I think that experience gained among the wounded may be of some interest and value in civil life.

The great mass of fractures seen in military practice is compound—there are simple fractures too, of course. Men fall down in the trenches or are run over or struck by heavy objects in the field as well as at home. These, however, I shall not consider to-night.

The effect of a flying missile on the bone varies as the product of its mass and its velocity, somewhat also with its shape at the moment of impact and with the mass and texture of the bone. Most wounds are caused either by small caliber projectiles—i. e., bullets fired from a hand rifle or a machine gun, by fragments of shell, or by shrapnel.

The modern small caliber bullet has a high velocity, 2000 feet a second and more, not only at the muzzle of the rifle, but for a great distance along its course. It carries over 1500 yards with a velocity of 900 feet and has an energy at this distance sufficient not only to pierce a bone, but considerable to spare after shattering it. At short range every bullet has a more or less explosive effect, and acts not only parallel but at more or less acute angles to its line of flight. One may explain the difference somewhat in this way:

If the bullet strikes a bone near the end of its flight, when its energy is almost expended, the particles struck will abate this remnant of energy to zero, and will be moved out of their positions but slowly; they will be pushed aside if they are of a texture sufficiently yielding, so that the bone will be pierced by a hole little larger than the caliber of the bullet, or, if the bone struck is of a firmer texture, a chip will be knocked out of it whose flight will soon be stopped by the opposing adjacent tissues. If, on the other hand, a bullet strikes a bone with the energy that has been imparted to it in the barrel of the rifle but little diminished, it will move the particles struck, not a little and comparatively slowly, but violently from their positions; and they in turn will fly onward as secondary missiles, hurling other chips from their path; these then will be projected further as tertiary missiles, and so on, until the entire energy lost by the bullet on impact with its target has been expended. Now some of the bone is struck, not squarely end on, but sideways; its fragments are hurled at angles to the path of the bullet, and they in turn hurl other fragments at

\* Read at Marin County Medical Society, July 13, 1916, and at San Francisco County Medical Society, October 17, 1916.

angles to theirs, so that there results a conical wound, small at the apex, just large enough to admit the bullet, increasing in diameter, as secondary and tertiary missiles cover greater and greater areas. (See Fig. 1.)

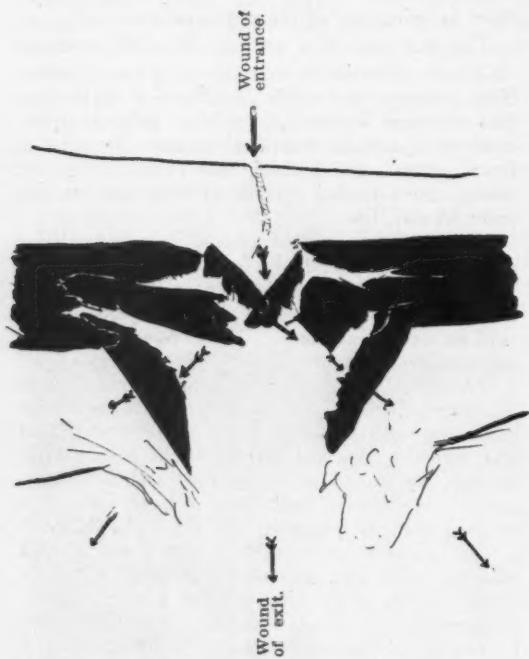


Fig. 1.  
Short range fracture (explosive violence).

In the early part of the war these fractures led to accusations on both sides of the use of illegal ammunition—the dum-dum bullet—a bullet with a hollow tip or a tip from which the nickel casing had been removed. Many of the accusations were, I think, unwarranted. Every bullet can act like a dum-dum, it being not the bullet itself that has this explosive violence, but splinters of bone and other tissues acting as secondary missiles.

Midway between true large caliber ammunition and the rifle bullet stands shrapnel. Shrapnel consists of two or three hundred leaden bullets encased in a shell. They have a high enough initial velocity, but the explosive charge acts only for an instant. The moment the shell bursts the exploding gases are released and no longer act on the missile, so that its velocity is soon spent. Even at moderate ranges from the site of explosion, shrapnel will patter down harmlessly like hail upon a roof, will pierce the clothing and fall down into the man's underclothes, or penetrate the skin but a short distance; at close range, however, they produce fractures. The bone usually stops the bullet, so that we find the lead scattered about promiscuously in the tissues, or find the shrapnel perhaps split in two somewhere under the skin opposite the wound of entrance.

The worst fractures are caused by fragments of shell. You can readily imagine the destruction the larger pieces (Vd. Fig. 3) might make, but

even small ones may cause horrible injuries. Bones are sometimes shattered by a fragment no larger than a pea. The force of the exploding shell is enormous—it throws the man into the air or on to the ground, twists his limbs about, and puts his muscles under sudden and unwonted strains against which he is powerless to defend himself. It needs but a small additional force acting directly on the bone to make it snap.

As to the various forms of fracture: We find all kinds. In the first place, infractions without breaks of continuity. The bullet may simply pierce a hole through the bone without breaking it off, especially at the epiphyses, which are spongy and not brittle and offer little resistance. The head and neck of the femur and the head of the tibia are favorite sites for this kind of fracture. A missile may pierce the bone and stick in the marrow, so that we have a wound of entry but none of exit. Penetrating but non-perforating fractures of the skull are similar injuries, only that instead of sticking in the marrow, the projectile imbeds itself in the brain. In fractures both of the long bones and of the skull, the shot knocks out a pyramidal piece of bone, the base of the pyramid being toward the inside. (Fig. 4.) These are dangerous fractures. A bullet carries infectious material into the closed marrow cavity, and septic osteomyelitis and long-continued attacks of fever often follow. Another fracture without a break in continuity is one where the bullet has grazed or glanced off the bone and split a chip from its side. A nearly spent bullet may strike squarely but with little force, bend the bone and spread it

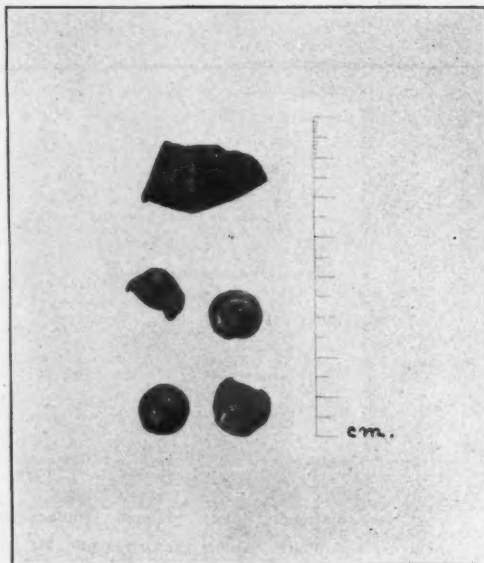


Fig. 2.  
Fragment of hand grenade (upper fragment) and four shrapnel bullets.

into longitudinal fissures, but not break it through. One often sees these fissures in the tibia. Complete fractures are as varied as the incomplete ones. A blunt missile of considerable bulk, but moving with no great speed, shrapnel for instance, may

produce a clean transverse fracture, like the kick of a horse or the blow of a club—there may be longitudinal fissures running out from the transverse break—perhaps the slower giving way under a lateral bending strain or the weight of the man's body falling to one side, or the tension of the muscles may have this effect. Then we have the butterfly fractures one reads so much about. The missile may smash the bone into dozens of small pieces, either because of its weight (the most exorbitant things have been removed from men's bodies, a whole fuse cap weighing several pounds is no great rarity), or because of its great velocity, which as we saw before may give to any projectile an explosive effect.

The damage done is much greater when the bullet turns before it strikes and hits the bone side on; the surface over which it acts is greater and its energy carried further along the bone to the soft parts. Quite remarkable are the fractures produced by indirect and direct violence combined. The more one looks for this combination the oftener does it come to one's notice; in fact, even in gunshot wounds, the direct fracture par excellence, it is rare to see a fracture that does not show some effects of indirect violence, of a bending or a twisting strain due to the weight of the man in falling or to reflex efforts of his muscles in saving his limb from injury. My attention was first called to this in a discussion with Dr. Rixford on a man at the old City and County Hospital. A burglar had been shot in the leg below the knee—his bone was not shattered in the path of the bullet, however, but quite at a distance. He had a spiral fracture of the tibia—a *spiral fracture*, that is, one that can only be the result of indirect violence; for it is impossible to imagine a bullet twisting a bone asunder. The bullet must have started the spring in the texture of the bone, but once started the final nature of the break must have been determined by the man's fall or his efforts to save himself from falling. He described quite well how he was caught in a sand lot and how he twisted his body in coming to the ground.

Whereas these anatomical considerations have some influence on the clinical course of fractures and a square even break is naturally easier to treat than one that shows dozens of splinters, the form of fracture is but a minor matter—what does make a difference and determines life or death, is infection.

Von Bergmann, the father of modern military surgery, formulated his basic principles of treatment on the theory that small caliber missiles and the wounds produced by them were primarily sterile. His teachings have been an incalculable blessing, but everyone is agreed, I think, that his premises were wrong. Gunshot wounds, even small caliber ones, are not sterile—they are all of them primarily infected, as recent bacteriological examinations of fresh wounds have shown. The theories of how gunshot wounds were sterilized and what made them sterile as long as they were not infected from without, the theories of sterilization by heat developed through impact of the bullet, etc., etc., always seemed forced; recent investiga-

tions have shown that the findings on which they were based were inaccurate. The wound is practically always infected, but it need not always show clinical signs of infection. Trouble only begins when the infection is unusually virulent, when there are tetanus or gas bacilli in a wound, or when there are added to the infection other factors that make it difficult for the body to fight the invading germs; when there is bruising and mangling of tissues, much bleeding and clotting, foreign bodies and dirt and other dead material from inside or out. Dirt is the determining factor. One has to see these poor fellows to know what it means—see the ragged mangled wounds, open them, pick out fragments of shell incrustated with dirt and rust, bits of gray cloth, shreds of uniform and underclothing and leather matted into the muscles, and smell the horrible stench that comes from them. The nature of the fracture makes some difference, of course. When a thigh is shattered for a distance of six inches or more, when a leg is tense, all the intermuscular spaces full of blood clot, the muscles themselves dark brown and hard with hemorrhage from the knee to the hip; when there is a wound the size of one's hand, from which tags and shreds of fascia and muscle hang; when the ends of a broken bone have ground dirt into a limb during the long ride from the trenches to a field hospital, then infection spreads through the mangled flesh like wild-fire, and the next days and weeks are a long fight for limb and life.

It is the infection, its nature, its virulence and the ground it has to spread in, that determine the course of fractures in war time. The wounds are all infected bacteriologically, it is true, but all are not infected clinically, especially the small caliber wounds. If a rifle shot with a small wound of entry and of exit comes into our hands early, and we reduce the deformity and set the part at rest with a well-fitting splint at once, the fracture will often heal simply and smoothly without fever and suppuration, in spite of the bacteriologically demonstrable infection. I do not fancy that the first dressing plays a great part. A man must have a particularly pernicious genius to infect a fracture from the outside. It can be done by boring into the wound with one's fingers or something of the kind, but I do not think that the first dressing makes much difference. It does not even seem to make much difference whether the wound is dressed or not. The deep parts are soon sealed off by a blood-clot or by the muscle and fascia sliding one over the other like a valve. (Fig. 5.) Some wounds may suppurate superficially but heal quite kindly in the depths. Others, particularly wounds from artillery projectiles, are so badly infected from the start and the conditions for healing are so poor, that their course is bound to be stormy unless something is done. If the quantities of infected exudate and products of decomposition of blood and dead tissue are too great to escape from the depths of the wound, they travel into the preformed loose spaces between the muscles and fascia, into bursae and lymph channels. For the first few days the man is comparatively



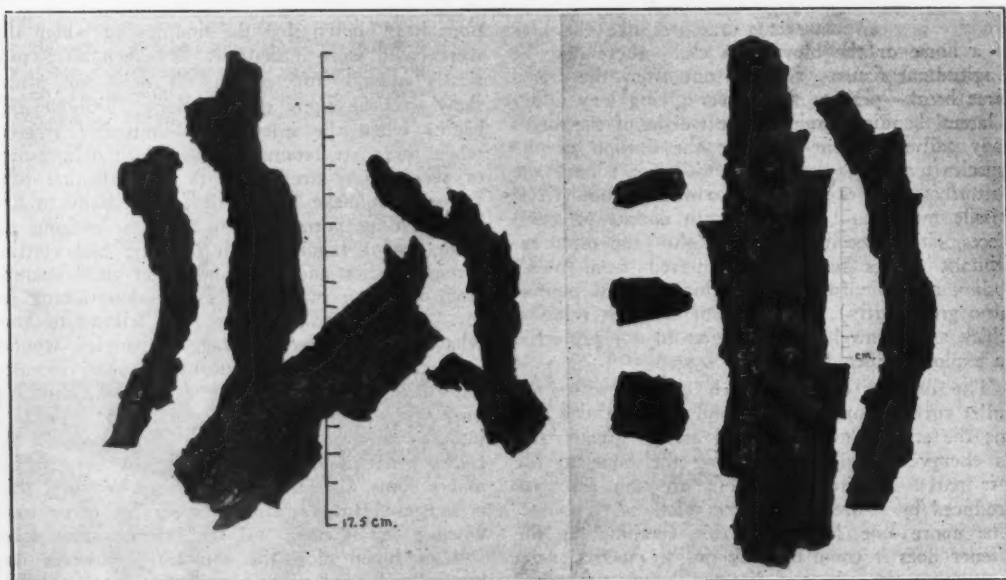


Fig. 3.  
Fragments of shell.

well; he is sent off by hospital train, the journey shakes him considerably, he is lifted on and off stretchers two or three times and he arrives at the home hospital with a fever of  $104^{\circ}$  or  $105^{\circ}$ , with an evil-smelling wound that shows a thick fibrinous membrane, with a dry tongue, an anxious or a stupid expression and trembling hands. There is a long course of sepsis ahead.

Now as to treatment. Treatment is difficult—every fracture offers different problems and every one is difficult to treat justly—no matter how great one's experience. Which fracture to let alone, which to treat by open operation, when to operate, how much to risk for the sake of ultimate recovery of function and when to undertake the risk—all these questions recur again and again at a fracture patient's bedside; they keep one thinking and deliberating and accompany one when one leaves the ward, dissatisfied and full of doubt as to the wisdom of one's procedure. We here at home have the advantage of being free to act unhampered by military exigencies. Urgency of hospital evacuation and questions of transportation guide and often determine the army surgeon's course. I shall leave them aside, as they are of tactical rather than medical interest.

With certain types of fracture there can be little doubt as to treatment. To take two extremes, the simpler one first: a fracture from a gunshot, say at a distance of from one to two thousand yards with little splintering, a small wound of entrance and a similar one of exit. Here we can risk conservative treatment, reduce the deformity, immobilize the limb with a splint—plaster of paris is best—and watch and wait. As gunshot wounds are usually covered by a scab, it is best to fenestrate the plaster so as to be able to dress the wound at reasonable intervals without disturbing the limb. If one includes the dressing in the cast

and lets it stay, pus accumulates under the scab, and I think that in certain cases it may burrow its way into the deep parts and secondarily infect them.

These are the simple cases that have a course almost like an uncomplicated fracture.

On the other extreme are wounded struck by fragments of shell such as are shown in the figure; they come in with a jagged wound of entrance, perhaps none of exit, their thighs rapidly swell to a vast size, and one can tell by palpation and by deformity even without an X-ray that the bone is badly shattered. To let these patients alone, to merely dress their wounds and apply a splint, is to invite disaster. The wounds are often remarkably small, smaller than the diameter of the projectile that caused them. They are closed by the retraction of the skin and the valve-like action of the muscles and fascia beneath; enclosed in them are great masses of blood-clot and bruised and dead muscle and fascia. They should be opened by generous intermuscular incisions that release the dead parts and the exudate around the bone from all pressure. The fascia should be further slackened if necessary, by incisions perpendicular to the lips of the wound.

A little fever need not make us over anxious. Every jarring and moving of the fracture, every change of dressing or attempt at reduction is followed by fever. One is inclined to regard the fever too seriously at first and to do too much. If the man is let alone his temperature will usually fall in a few days. If one worries, changes dressings, takes off splints and puts them on again, the man never comes to rest—he never gets a chance, and the continual movement alone, the transportation from bed to operating-room suffices to send him from bad to worse. The thing to do is to get the fracture in proper shape at the beginning

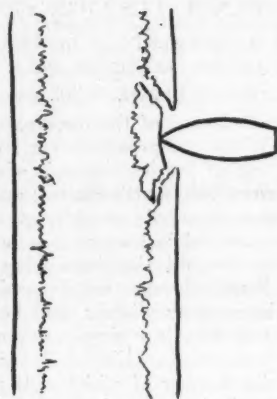


Fig. 4.

Long range fracture without break in continuity.  
Pyramidal chip, base towards medullary cavity.

as soon as possible, and at one sitting, even at the risk of some trauma—although the less trauma the smoother the course—and then let the man be—to wait—and not to harass the poor fellow with change of splints and traction apparatus in a vain endeavor to satisfy an insistent X-ray conscience. In a week or so his temperature will usually be near normal, then we may split the cast or saw it through and correct the deformity by various methods of extension and push and pull.

How to treat the bone depends upon the nature of the fracture. Entirely free fragments should be removed, but bone that hangs by its periosteum, no matter how loosely, should be left. If the two main fragments can be brought together without much trouble they should be fastened either by engaging their ends or by surrounding them with a loop of wire—picture cord is good and strong—the ends of the wire should be left long and hanging out of the wound. It is often possible to get fragments into some kind of apposition even in badly shattered fractures. The fastening need not be very secure—the plaster of paris splint will hold the parts together if we can but steady them until we get the splint on. Needless to say, no attempt should be made at an anatomically perfect restitution—this involves too much trauma. Lane plates are out of place; the bone should not be denuded of periosteum. The wound should be drained; how is no great matter, something that will not stick to the raw surface is best. Soft sheet rubber or old rubber gloves make excellent drains, or gauze spread with vaseline or some other ointment. The incision should be left wide open and the cast generously fenestrated—a fenestrated cast is much better than an interrupted one; that is, one put on in sections with iron or aluminum bands bridging the space between the plaster. If one has the chance to treat fractures early in this way they will usually run a fairly smooth course without sepsis. The most difficult ones to treat are those where this prophylactic operation has been delayed or has not been done.

Wounded coming in a week or two after injury with fever and sepsis, take all a man has of judgment and foresight and courage and persever-

ance. Each case is different. It is hard to lay down general rules. Usually, however, one inclines to do too much, even in these cases. We must consider that the infection has already spread, often far beyond reach of the knife. Amputation is a remedy, it is true, but I have not had the courage to do it. It is easy for the surgeon and saves the patient a long course of illness—saves lives too, but who would not risk his life while there was a chance of saving his limb. With sufficient care on the part of the surgeon and sufficient opportunity for watching the course of the sepsis, incising abscesses as they appear and draining when necessary, need for amputation is rare. I amputated only those limbs that were gangrenous and have not regretted waiting. These late cases should be treated much like the first simple category—by watching them, incising abscesses (being on the lookout for them), by immobilizing and giving the patient rest.

The problem of dressing wounds that often reach from the knee to the hip and of still keeping the parts quiet, has not been solved quite satisfactorily; however, it is certain that most surgeons accustomed to the clean dressings of well-regulated civil hospitals are inclined at first to dress and disturb a wound too often.

The most difficult question of all is how much to risk for the sake of future function—in which cases and at what time to attempt a reduction of the deformity, when to change plaster for traction, whether to make a sudden traction, reduce the deformity once and for all and then immobilize, or whether to use a less rough method of extension acting over a period of days or weeks. To discuss these questions would take the whole evening, but I may say that an attempt at reduction and proper alignment as soon as the patient's condition at all permits, is not only desirable from the standpoint of his future usefulness, but seems to help restore his general health. Often one sees local inflammation and suppuration cease and sepsis disappear after a reduction that puts into their proper place fragments jammed into an irritated musculature. The gentlest and usually the safest way to reduce is by continuous traction on the suspended limb. The disadvantage to this method is the difficulty of keeping the limb quiet and especially of avoiding pressure sores. Ansinn's apparatus seems not to produce them, his results are astonishingly good.<sup>1</sup>

For combating sepsis, plenty of water, drop enemas with digalen and adrenalin 20 drops of each to a quart of tap water, four hours on and four hours off, have been useful. Better yet in desperate cases is blood transfusion. A number of men with pinched noses, sunken eyes, dry tongues, weak, apathetic and emaciated, seemingly marked by death, have turned for the better after transfusion and have recovered.

And now to conclude, I am not sure of myself and do not know whether I ever shall be as to the best way of treating each individual case. But I am convinced of one thing, and that is, not to

<sup>1</sup> Beitr. z. Klin. Chir., Vol. 97, pp. 97 and 559.

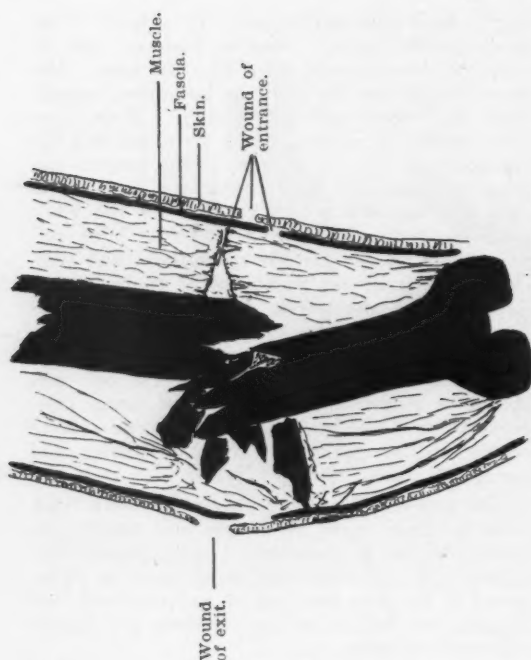


Fig. 5.

Valve-like closure of wound-channel by shifting in relative position of soft parts after fracture.

let the fractures go simply because they are complicated. An open wound and sepsis is no excuse for disregarding ultimate function. On the contrary, if one gets the fracture into decent alignment, gets a limb that looks something like a proper human extremity, the sepsis usually quiets down and the man's general health improves. If one is afraid of sepsis, and contents oneself with immobilization without regard for further function, the men certainly do no better, often not as well as after a correct reposition; and when they do get well, the sight of these poor cripples hobbling about on crooked and useless and painful limbs is a lasting reproach. It is right to risk considerable, even to risk life now and then for the sake of future activity.

I lost a few cases by not amputating, but had I the work to do over again, I should still take risks if need be, to prevent future crippling disablement. It is not only bare existence we must consider, a useful and active life is what one must offer a man, even though he risk dying to attain it. The dangers of a feverish sick-bed are soon forgotten, a distorted and painful limb, disability and pauperism are with a man as long as he lives.

In short: Do not let the fear of sepsis overshadow the ultimate goal, restoration of useful function. Keep this end in mind and work toward it from the very beginning. It is not difficult to attain if taken in hand early. Do what is necessary at once. Do not leave the patient until you are satisfied, then let him be and God will take care of him.

"Je le pansay, Dieu le guerit," said Ambroise Paré.

## LEUKOPENIA, ITS SIGNIFICANCE.\*

FROM THE DEPARTMENT OF CLINICAL MEDICINE OF THE SAN FRANCISCO POLYCLINIC.

By JOSEPH H. CATTON, M. D., San Francisco.

Leukocytosis is one of the most valuable aids in diagnosis. While the presence of a leukopenia has been made use of in the diagnosis of malaria, typhoid, influenza and Banti's disease; and its appearance has been regarded as ominous when it has replaced an expected leukocytosis, as in pneumonia, —nevertheless its full significance has been unappreciated. Standard texts on diagnosis and many works on hematology dismiss leukopenia with a paragraph, and often it is simply referred to as the absence of leukocytosis. Ehrlich<sup>22</sup> has said "a reduction in the number of white cells plays a very unimportant role in comparison to their increase."

And yet—a leukopenia is, in certain cases, just as definitely a sign that the polynuclear cells have migrated to the lungs<sup>4</sup> or elsewhere, as is a leukocytosis that they have gathered in the peripheral circulation: An absence of chemotaxis or a negative chemotaxis is just as important as a positive chemotaxis.

A leukopenia is, in other cases, just as definite a mark of destruction of myelocytic bone marrow, as is a leukocytosis of its stimulation.

A leukopenia may mean an increased destruction of the leukocytes as they lie in the blood stream or in the spleen, and a sign which points to the destruction of a tissue, is, to the author, more, rather than less important, than one which points to its stimulation.

And so, this communication is a plea to give leukopenia more consideration as a diagnostic aid, and it will point out that its presence is significant because—(1) leukopenia is related to lymphocytosis, (2) it is an expression of a diminution of the total result of polynuclear function, (3) it marks the presence of certain diseases and (4) it is an indicator of tendency toward certain symptoms, syndromes and diseases.

*Relation to lymphocytosis.* Much has been written during the past three or four years concerning the differential leukocyte count; and statements have been made regarding the frequency of low polynuclear and high lymphocytic percentages<sup>38</sup>; and caution has been given that too much importance must not be attached to these signs<sup>9-38-40</sup>. The several authors have established one thing definitely—that these blood findings are not infrequent; this communication confirms this fact but insists that they are significant.

Health means balanced metabolism. Under given conditions, the healthy stomach secretes a certain amount of HCl; if too much, or too little is secreted, well known clinical signs and symptoms may be present. The more narrow are kept the normal limits of amount of secretion, and the more insistently is demanded cause of variance from these narrow limits the more exact will be diagnosis. Such considerations apply equally as well to the leukocyte relations.

There are normal limits within which the num-

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ber of polynuclear leukocytes may vary, relatively or absolutely in health, and too great a reduction in the number of these cells usually gives disturbance from two sources; (1) from the lack of the polynuclear cells themselves and (2) from a relative increase in the mononuclear cells, for a leukopenia is usually accompanied by a relative lymphocytosis, and for the following reasons.

The various leukocytes, in addition to their more specific functions, have certain functions in common; and so the polynuclears as a class, may in certain measure, take the place of, or compensate for the mononuclears as a class. So, it is found that the leukoblastic and the lymphoblastic tissues are rarely equally stimulated or depressed together, and a leukopenia is usually accompanied by a relative lymphocytosis, and a lymphocytosis by a relative decrease in the number of polynuclear cells. Staines, Jones and Rosenberg<sup>40</sup> find that total white counts in New York and Colorado Springs average the same, namely 7500 cells per cmm., and that while the lymphocytes are increased 20% to 30% at the higher altitude, the polynuclears are decreased in the same proportion. Buchanan<sup>8</sup> says a leukopenia is invariably accompanied by lymphocytosis; in extensive studies Andrews<sup>4</sup> noted that the polynuclear and the lymphocytic cells did not vary together; the same has been found the rule in the University of California and San Francisco Polyclinic wards of the San Francisco Hospital. It may be noted in the list of causes of leukopenia given in this paper how often a leukopenia and a lymphocytosis tend to be associated. Then a goodly portion of the significance of lymphocytosis may be claimed as also related to leukopenia.

*Regarding the functions of the polynuclear leukocyte.* The value of a cell depends on its functions, and each and every function of the polynuclear or the lymphocytic cell will, when sufficiently investigated, be found to have definite clinical significance. A diminution in the number of polynuclear cells means a loss, proportionately, of the results of its activities. So, one must consider the specific functions of the polynuclear cell as contrasted with those of the mononuclears, for it has been mentioned that a leukopenia means always a loss in the specific accomplishments of the polynuclear, and in the majority of cases, a probable gain in the specific accomplishments of the mononuclear cells.

*Chemotaxis.* Certain bacteria living or dead, bacterial extractives, copper, mercury, and products of cell destruction (including those of the leukocytes) have been found to exert a positive chemotaxis on the polynuclear and not the mononuclear leukocytes<sup>53-59</sup>; and, with the possible exception of tuberculin no agent has been proven to exert a similar attraction on the mononuclear cells. Similarly, certain extremely virulent bacteria, tetanus toxin<sup>53-59</sup> and anaphylotoxin<sup>59</sup> exert a negative chemotaxis specifically on the polynuclear cells, and no agent has been proven to so affect the mononuclear cells. Then, a leukopenia may indicate the absence of a positively chemotactic, or the presence of a negatively chemotactic agent.

*Motility.* While motility may be demonstrated

in all the leukocytes, the polynuclear cells show this characteristic much more definitely.

*Phagocytosis.* The polynuclear leukocytes are essentially concerned with the ingestion of certain bacteria, while the mononuclear leukocytes together with certain fixed tissue cells are concerned with the ingestion of animal cells whether native or foreign, and the latter may include the red cells and the polynuclear cells of the organism itself. An importance for leukopenia is apparent when these functions are considered.

*Metabolism.* The leukocytes play a very important role in transporting food material,<sup>28-44</sup> and here again each variety is found subserving different functions. While it has been demonstrated that both the polynuclear and the mononuclear cells contain proteolytic ferments, those of the former act only in a weakly alkaline medium, and the mononuclear leukoprotease acts in a weakly acid one.<sup>59</sup> Gruner,<sup>25</sup> of Leeds, finds definite and characteristic changes in the polynuclear nuclei during, and only during, the digestion of proteid: glycogen is carried by the polynuclears in diabetes and certain other conditions and can be demonstrated by the familiar iodine reaction.<sup>22</sup> A leukopenia means a loss of the results of these functions. Bergel<sup>6</sup> and others have shown that various lymphocytic extractives will digest fats; and other investigators<sup>6-50</sup> that the lymphocyte may carry, emulsify and saponify fats. These findings are of interest when one considers the relation between leukopenia and lymphocytosis.

*Other differences.* Lymphocytic extracts are hemolytic for they contain fatty acids and soaps, and in addition a hemolysin<sup>53</sup>; extracts of polynuclear cells contain no such agents. Polynuclear extracts are strongly germicidal, lymphocytic extracts only weakly so. The reaction within a polynuclear during phagocytosis is acid: within a giant cell it is alkaline.<sup>53</sup> The viscosity of the blood decreases in proportion to the leukopenia.<sup>40</sup>

And now, although there is considerable evidence that the intra and extracellular ferments of the blood are not identical<sup>50</sup>; nevertheless the extractives of the two great varieties of leukocytes have been shown to have different properties, and the blood stream is continuously receiving the products of the disintegration of these cells. And so, is a significance suggested for leukopenia on the basis of loss of the specific accomplishments of the polynuclear cell.

*Conditions in which Leukopenia has been found more or less characteristic.* A discussion of the mechanism of leukopenia will require another paper, but it may be mentioned here that it may occur as the result of (1) underproduction, (2) overdestruction and (3) altered distribution of the polynuclear cells. The list below includes those conditions in which a leukopenia has been found more or less characteristic; and, because the list is long does not mean that the sign may be of little value in diagnosis—for a neuralgia, or paraesthesia or a leukocytosis—each may, *per se*, suggest a similar number of etiological factors and these symp-

toms and signs are not therefore dismissed as of little value.

*Reduction in the number of polynuclear cells as measured in peripheral circulation may occur:*

#### I. Physiologically,

- (a) Absolute reduction in number of polynuclears.
  - (1) Certain vaso-motor conditions.
- (b) Relative reduction due to lymphocytic increase.
  - (1) Infants, (2) during digestion and (3) certain vaso-motor disturbances.

#### II. Pathologically,

##### (A) In certain exogenous infectious intoxications.

- (1) Preceding the infectious leukocytoses.<sup>1-4-19-35</sup>
- (2) Bacterial.
  - (a) Absolute reduction:—influenza, Malta fever<sup>52-57</sup> and severe and fatal infection.
  - (b) Absolute reduction+relative increase in lymphocytes:—typhoid,<sup>29-36</sup> typhus,<sup>37</sup> tuberculosis<sup>15</sup> and leprosy.<sup>17</sup>
  - (c) Relative reduction due to lymphocytic increase:—pertussis, certain tonsillitides<sup>11</sup>, and during prolonged lysis in pneumonia.<sup>24</sup>
- (3) Other parasitic infections.
  - (a) Absolute reduction:—kala azar.<sup>52</sup>
  - (b) Absolute reduction+relative increase in lymphocytes:—malaria, syphilis, trypanosomiasis, dengue<sup>52</sup> and in some cases of amoebic dysentery.<sup>23</sup>
  - (c) Relative reduction due to lymphocytic increase:—filariasis.<sup>51</sup>
- (4) Infections of unknown etiology.
  - (a) Absolute reduction:—German measles.
  - (b) Absolute reduction+relative increase in lymphocytes:—measles, mumps, and certain cases of smallpox<sup>12-16</sup> and scarlet fever.<sup>12</sup>
  - (c) Relative reduction due to lymphocytic increase:—certain acute and chronic infections in infants.

##### (B) Exogenous non-infectious intoxications.

- (1) Inorganic matter.
  - (a) Absolute reduction:—mercury and arsenic.<sup>23</sup>
  - (b) Absolute reduction+relative increase in lymphocytes:—lead.<sup>20-23</sup>
  - (c) Relative reduction due to increase in lymphocytes:—iodine.<sup>27-32</sup>
- (2) Organic matter, drugs, etc.
  - (a) Absolute reduction:—alcohol, morphine, ether,<sup>23</sup> ergot, tannic acid, atropin, picROTOXIN, agaracin, sulfonal,<sup>8</sup> curare,<sup>43</sup> and benzol.<sup>30</sup>
  - (b) Absolute reduction+relative increase in lymphocytes:—quinine.<sup>8</sup>
  - (c) Relative reduction due to lymphocytic increase:—pilocarpine and lecithin.<sup>27</sup>
- (3) Injections of foreign proteid, etc.
  - (a) Absolute reduction:—peptone, diastase,<sup>8</sup> various sera,<sup>8-27</sup> hemialbumose,<sup>43</sup> living and dead micro-organisms,<sup>35</sup> bile salts, pancreatin, bacterial toxins and trypsin.<sup>2-3</sup>

(b) Absolute reduction+relative increase in lymphocytes:—bacterial cultures.<sup>23-38</sup>

(c) Relative reduction due to increase in lymphocytes:—tuberculin, thyroid, dead "non-toxic" animal matter and bacterial filtrates.<sup>23</sup>

(4) Anaphylaxis.<sup>59</sup>

##### (C) Dyscrasic and other intoxications in the course of constitutional disease.

- (1) In diseases of the blood and lymphatic systems.
  - (a) Absolute reduction:—certain purpuras,<sup>13</sup> hemaglobinurea,<sup>28</sup> splenic anemia, aplastic anemia, aleukemic lymphadenomata, and polycythemia.<sup>13</sup>
  - (b) Absolute reduction+relative increase in lymphocytes:—pernicious anemia, chlorosis,<sup>18-27</sup> severe secondary anemias,<sup>57</sup> hemophilia,<sup>23-24</sup> severe anemias with gastro-intestinal disturbances in children,<sup>8</sup> and splenic anemia.
  - (c) Relative reduction due to increase in lymphocytes:—scurvy,<sup>23-24</sup> the leukemias, malignant lymphadenomata, sarcoma multiplex cutis, parasitic anemias<sup>8-24</sup> and following splenectomy.<sup>41</sup>
- (2) In ductless gland disturbance.
  - (a) Absolute reduction:—following thy-mectomy<sup>54</sup>; and in about half the cases of hypophysis, thyroid and adrenal disturbance, and in lymphatism.<sup>7</sup>
  - (b) Relative reduction due to increase in the lymphocytes:—majority of cases of thyroid, hypophysis and adrenal disturbance and in lymphatism<sup>7</sup>;
- (3) Other constitutional disturbances.
  - (a) Absolute decrease:—starvation, severe and overwhelming toxemias and exhaustion.
  - (b) Absolute decrease+relative increase in lymphocytes:—malnutrition.
  - (c) Relative decrease due to increase in lymphocytes:—various cachexias including malignancy, rickets, hepatic cirrhosis, gastro-intestinal upsets in children and debility from any cause.<sup>13</sup>

##### (D) Vasomotor disturbances.

- (a) Absolute decrease:—prolonged exposure to cold, short exposure to heat, prolonged baths whether hot or cold,<sup>11</sup> severe trauma,<sup>27</sup> shock<sup>10-27</sup> and application of irritants to the skin.<sup>30</sup>
- (b) Absolute reduction+relative increase in lymphocytes:—hay fever.<sup>8</sup>
- (c) Relative reduction due to increase in lymphocytes:—following adrenalin in an individual, with an irritable sympathetic nervous system, or sometimes following the injection of pilocarpine.<sup>30</sup>

##### (E) Following the use of rays.

- (a) Absolute reduction:—thorium X.<sup>26</sup>
- (b) Absolute reduction+relative increase in lymphocytes:—x-ray.<sup>10</sup>

##### (F) Unknown causes.

These relations are definite and warranted by

just such experimental investigation and clinical observation as have placed leukocytosis among the most important of diagnostic aids.

*A Measure of Diathesis.* And now, it is suggested that a leukopenia may be most significant as an indicator of tendency toward disease.

A previous communication<sup>12</sup> considered the etiology of orchitis, studied the leukocyte pictures in the infection reaching the testes through the blood stream, recorded the observation of testicular affection in an individual having a history of seven infectious diseases, six of which cause leukopenia—and at the same time who exhibited a leukopenia—and offered the suggestion that a reduction in the number of polynuclear leukocytes indicated a tendency toward orchitis.

A second communication<sup>13</sup> considered neuralgia and leukopenia, and showed that a relative or absolute reduction in the number of polynuclear cells was characteristic of the various infectious and non-infectious intoxications, of certain ductless gland upsets, of exposure to cold, of debility and of malnutrition—all of which conditions are likewise etiological in neuralgia.

It was further found<sup>14</sup> that elective bronchitis is usually the result of leukopenic infection.

A study of the etiology of tetany seems to indicate that here, too, a leukopenia may serve as a warning sign.

Most of the infectious diseases preceding lymphatic leukemia, some of which have been thought, at various times, to have been its cause, seem to give the leukopenia warning. It is interesting in this connection to read the case histories in Dr. Wilbur's paper on "Leukemia, an Infection."<sup>15</sup> Case No. 1 had had measles, mumps and whooping cough, all causes of a relative or absolute reduction in the number of polynuclear cells; had no leukocytotic diseases, and until his developing acute lymphatic leukemia, gave a normal total white count, but the low polynuclear count, namely, 41 to 48%. Case No. 2 had had smallpox. A polynuclear leukocytosis has been variously reported in smallpox, but it was shown in a previous study<sup>12</sup> that a. the number of leukocytes may be normal, b. violent and hemorrhagic cases may present a leukopenia, c. mild cases may show subnormal counts and d. the increase in cells at pustulation is due largely to lymphocytes. Neither had this case a history of other leukocytotic infections. Case No. 3 had had three attacks of malaria; and syphilis; both are causes of blood pictures under discussion; also gave history of frequent "colds" toward which leukopenic diseases predispose; had had no leukocytotic diseases. Similarly, a case coming under the observation of Dr. Ebright and the author presented a leukopenia for several years, without determined etiology, and suddenly developed the picture of acute lymphatic leukemia. As Dr. Wilbur says, "it is probable that organisms of low virulence, but of various kinds, may, working in a soil prepared by previous infections, bring about the leukemic reaction." The four cases mentioned and the studies so far carried out, prompt the author to suggest investigation as to whether the leukopenic infections are not usually

the ones that prepare the soil for future lymphatic leukemias.

Disturbed leukocyte balance with low polynuclears may also warn against tuberculosis, the latter disease frequently having its incipency in measles, or pertussis, or during prolonged over-fatigue, or following typhoid,<sup>21</sup> all of which conditions tend to give the blood pictures mentioned.

The relations of leukopenia to these, and other symptoms, syndromes and diseases are being further investigated, as are its relations to tendency toward hemorrhage, to disturbance in calcium metabolism and other conditions.

#### *In summary:*

1. Leukopenia bears a definite relation to lymphocytosis.
2. Leukopenia, in proportion to its degree, expresses a loss in the specific accomplishments of the polynuclear cell.
3. Leukopenia marks the presence of certain diseases.
4. Leukopenia is an indicator of tendency toward orchitis, neuralgia, elective bronchitis, and other symptoms, syndromes and diseases.

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### SUBDELTOID BURSTITIS.\*

By SAXTON TEMPLE POPE, M. D., San Francisco.

Subdeltoid bursitis has been called many names: periarthrit, brachial neuritis, circumflex neuritis, and rheumatism; but Codman first gave an accurate description of the disease and dictated its cure.

It is a disease that nearly always results from trauma, seldom from infection. The method of its production is that of excessive abduction of the shoulder joint, in which position the bursa is pinched between the greater tuberosity of the humerus and the acromion. Codman has shown that the supra-spinatus muscle initiates the movement of abduction, and if for any reason this muscle fails to act, its tendon becomes caught beneath the acromion and suffers injury with the bursa during the act of abduction.

The symptoms are local pain, neuritic distress down the arm and across the neck, limited movement, inability to separate the arm from the body, or use the deltoid muscle at all. Pain may be worse at night. Disability may last for weeks in the acute traumatic cases, to years in the adhesive or hyperplastic bursitides. It may completely incapacitate a man for work.

Rest, hot compresses, immobilization are required in the acute cases. If effusion exists, aspiration may assist recovery. Manipulations are curative in some types, especially the adhesive bursitis.

Where disability is prolonged and other methods fail, complete cure can be obtained by dissecting out the bursa. In a series of 24 cases, 15 were treated palliatively, or by manipulation; 3 by aspi-

ration; 6 by operation. The latter gave the highest percentage of cures.

### Discussion.

Dr. G. C. Macdonald: I have seen a great number of such cases in sailors, where they have fallen on the deck or other parts of the ship. My experience is that removing the bursa does effect a cure. A man with bursitis is certainly incapacitated, in some cases practically so for life. In very chronic conditions the bursa becomes much enlarged and contains the so-called rice or melon-seed bodies.

### TWO CASES OF POISONING FROM THE USE OF ALYPIN IN THE URETHRA.\*

By LOUIS CLIVE JACOBS, M. D., San Francisco.

The purpose of my talk this evening is to report to you two cases of poisoning from the use of alypin in the urethra.

We find in treating local conditions in the deep urethra that in certain patients it has been found advisable to use a drug locally for the purpose of producing analgesia. The necessity for this arises when one is dealing with a hypersensitive mucous membrane in a person who is unable to stand much pain; when an operative procedure, such as punching out a prostatic bar obstruction, in which cases we have no choice but a local anesthetic, is undertaken; or when removing a large-sized foreign body from the bladder through the operative cystoscope.

We know that the mucosa of the deep urethra is normally more sensitive than the mucous membrane of any other part of the body; and in the mere passage of instruments such as the cystourethroscope it has been my practice not to resort to the use of various drugs such as cocaine, novocaine, stovaine, etc. But I have occasionally used alypin in the deep urethra and upon reports of such men as Bransford, Lewis, Willys Meyer, Edward Keyes, Paul Pilcher and other prominent urologists known to you all, I had become converted to the belief that it was without toxic effects.

Bransford Lewis recommends the use of this drug almost indiscriminately. He applies it to the deep urethra in the form of tablets through a small urethral depositor, an instrument which he devised, and states that as soon as the effect of one tablet is worn off another can be deposited in the necessary spot, and that in his experience he has never noticed toxic symptoms from its use.

Though I believe alypin to be as valuable a drug as any which we might use to obtain analgesia in the deep urethra, I must state that it is not without its dangers and the sooner we realize its dangers the better we shall be able to guard against its untoward effects.

Alypin itself is a drug which has been popularized in recent years by a most prominent urologist. Chemically it is listed as a monhydrochloride of benzoyl, etc., and occurs as a white powder, crystalline, very soluble in water and alcohol. Watery solutions have a neutral reaction and are easily sterilized. Hence alypin can be prepared in various solutions of various strengths. Keyes

\* Read before the San Francisco County Medical Society, August 15, 1916.

\* Read before the San Francisco County Medical Society, October 31, 1916.

of New York has used as high as 25 cubic centimeters of a 2% solution (8 gr.) in the urethra and bladder without toxic effect. Recent investigators have demonstrated the dependence of toxicity of cocaine and novocaine on the rate at which the drug is absorbed, therefore, I must give this as an explanation of the two cases which I am reporting. Fortunately both of these patients recovered without any permanent effects.

Though literature tells us that Necker observed occasionally by-effects from 3% alypin solutions especially in cases of sphincteric spasm and Garasch twice witnessed poisonous effects after the introduction of 5 cubic centimeters of 2 and 5% solutions respectively, into the urethra. The symptoms consisted of nausea, vomiting, vertigo, dyspnoea, hallucinations and spasms, but subsided quite rapidly without any permanent damage. Garasch believes that toxic manifestations may readily result in exhausted individuals.

On June 24th, Mr. ZY. was referred to me by a general practitioner of this city for a persistent morning discharge for which he had been treating for the last two years. With two drams of 2% solution of alypin injected by pressure through the urinary meatus and held for a few minutes, I was enabled to pass a No. 26 cystourethroscope without any discomfort to the patient and found an enormously enlarged verumontanum with large ejaculatory orifices and dilated discharging ducts. I mention this to emphasize the fact that the examination was a thorough one without any discomfort or distress whatever to the patient. He was immediately enabled to return to work and reported at my office within a few days feeling "tip top," as he expressed it. On July 10th, in order to treat the diseased area in the posterior urethra, I intended to use a large Leurs posterior urethroscope, which I tried to pass but on account of the sensibility of the urethra withdrew it and found there was an escape of a few drops of blood due to the traumatism of the instrument in the anterior urethra. I then injected two drams of 2% alypin solution, waited for a few minutes and then inserted the urethroscope. When the instrument reached the posterior urethra there was a terrific spasm on the part of the patient followed by convulsions which lasted for about five minutes. His respiratory muscles were affected and he was in clonic spasm, followed by a tonic spasm, the face was cyanotic, the pupils dilated and the jaws were locked in spasm. The pulse which was rapid and full became weaker and hardly perceptible. By unlocking the jaws and performing traction on the tongue with artificial respiration I was soon gratified to see the patient again breathing normally, and the pulse as full and strong as previous to the injection. He was conscious but more or less stupefied, unable to remember his name or where he lived, but knew that he was in a doctor's office. It was at least two hours before he felt able to find his way home. Since this time I have treated and examined Mr. ZY., frequently passing instruments into his urethra without the use of local anesthesia and he has never

had any repetition of this early attack. His history shows no epilepsy nor any other condition that would have any bearing upon this report.

Case No. 2, was a case of Dr. Henry Meyer's. The patient, a man of 27 years of age, was referred to him for an examination owing to the fact that he had had, several years previously, a kidney removed which was supposed to be tuberculous and an attempt at catheterization of the bladder was made, but due to the highly sensitive urethra it was very painful and the catheter was withdrawn, following which there was a slight bleeding. A two dram dose of a 2% alypin solution was then injected by means of pressure. Within a few minutes, just as the cysto-urethroscope had entered the meatus, there were violent clonic spasms with the complete cessation of respiration, the patient became cyanotic and the pulse was not perceptible. The patient was apparently dead but after artificial respiration with traction on the tongue, respiration was gradually established. It was at least five hours before he had sufficiently recovered to be sent home.

We should take cognizance of the fact that the urethras of these two cases were highly sensitive; also that there was bleeding in both cases before the injection of alypin; that neither could have arisen from the irritation of the instrument alone; and that in Dr. Meyer's case the instrument had not passed beyond the meatus before the patient had convulsions.

From these cases, I draw the following conclusions:

That the toxic symptoms were the result of alypin absorption.

That the development of toxic symptoms is dependent upon the rate of absorption—a rapid absorption and hypersusceptibility of the patient to the drug.

That alypin is absorbed more readily from a lacerated or traumatized mucous membrane of the urethra.

That its toxicological action is first upon the respiratory system and then upon the circulatory system.

That when the mucous membrane is traumatized as evidenced by the escape of blood from the urinary meatus, it is not safe to instill a local anesthetic such as cocaine, alypin, novocaine, etc.

#### Discussion.

Dr. M. Krotoszyner: The two cases reported by Dr. Jacobs are of great practical importance, since alypin always enjoyed the reputation of combining safety with efficacy as a local anesthetic of the genito-urinary canal. Such symptoms, as observed in these two cases, we were used to see in connection with the employment of cocaine in the urethra, and in my earlier work I have seen distressing, and in one or two instances, most alarming symptoms after injection of small doses of cocaine in the anterior urethra. Absorption of the drug, when injected into the bladder, rarely occurs under normal conditions. The late Nitze was in the habit of injecting two ounces of a 4% cocaine solution into the bladder prior to cystoscopy, and I know of only one accident in connection with that procedure, though I attended a great many cystoscopies at his clinic.

Owing to the dangers of local anesthesia, even

when using small doses of less toxic drugs, like novocaine, I have, for many years past, carried out urethral instrumentation, including cystoscopy, whenever feasible, without the application of any anesthetic, and such experiences, as reported by Dr. Jacobs, will certainly tend to fortify me in continuing in the same manner in the future.

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### INDUSTRIAL ACCIDENTS.

[In this column we shall publish, from time to time, short comments of practical value by men of experience, dealing with special fields of medicine in relation to Industrial Accidents.]

### COMMON INJURIES OF THE EYE AND THEIR TREATMENT.

By HANS BARKAN, M. D., San Francisco.

Injuries of the eye form a considerable portion of the bodily injuries that we are called to deal with in the Accident Insurance cases. They of all injuries receive as nearly as I have been able to see in the last two years, the least expert attention, when on the face of it, they require perhaps the most expert. This is, of course, due to the fact that necessity—imposed by immediate need for aid in localities where the attention of a specialist is impossible to obtain—calls for treatment by some one though not an expert.

For the benefit of those who are called upon to attend to these cases before they can be referred to a specialist or who may have to attend to the case for a number of days I would like to make the following points; which, while necessarily very fragmentary, apply to perhaps 60 to 70 per cent. of the ordinary injuries seen.

First: Superficial corneal injuries containing foreign bodies: 4% cocaine 1 drop a minute for five minutes, with the eye closed during this time to prevent drying of the corneal epithelium and the settling of dust upon the insensitive cornea. Removal of foreign body preferably with a dull spud, not a pointed one. If patient cannot hold his eye steady, it helps to make him look at a candle with his sound eye in a dark room. Remove not only the foreign body, but every bit of rust or brown discoloration left; when the body has been gently chipped out, there will be a congested conjunctiva with some evidence of secretion shown by the cilia being stuck together. Evert upper lid and apply 1% silver nitrate with an applicator, pressing this down upon the mucous membrane until this assumes a faint skimmed-milk hue. Leave the eye open for half an hour to an hour until the first desquamation of epithelium has taken place. On the end of a glass rod put any bland ointment into the conjunctival sac and bandage for about six hours. Dark glasses the

next day and for a few days a solution of zinc sulph. 1/2%.

Second: Ulcers of the cornea usually central, with usual antecedent history of the eye being slightly scratched with some object. The majority of cases are pneumococcus ulcers of a uniform yellow gray color, generally with an advancing deeper yellow colored edge.

The immediate treatment should be atropin 1 to 4% 3 to 4 drops the first half hour until the pupil is dilated. With thorough cocainizing apply applicator soaked in tincture of iodine to the ulcer until the entire ulcerated tissue is stained a mahogany brown. Dionin 10% t. i. d. and hot compresses for ten to fifteen minutes every hour, the eye closed between times by a pad or bandage. If at the end of six to twelve hours, the advancing edge is still a deep yellow or has progressed slightly while the body of the ulcer is somewhat cleaner, try zinc sulph. 20% solution with an applicator. Should the edge still advance, the actual cautery should be employed, destroying with it not only the advancing edge, but corneal tissue slightly beyond this.

If an electric cautery is not available, a knitting needle brought to a red hot point in a Bunsen burner will do very nicely. This all provided the ulcer when first seen is small.

By the time a patient is properly attended to—which is often late because the patient has so many times gotten sawdust, grains of wheat, coal or some other object into his eye without injury, that in this particular instance he simply wipes out the foreign body and waits four or five days before consulting the doctor—the ulcer is so large that nothing short of cauterizing the entire surface and beyond the advancing edge will stop it. In these cases such measures as tincture of iodine, zinc sulphate and optochin are useless. The best that can be promised the patient and the insurance company is preservation of the eye ball, but no preservation of vision.

Third: Foreign bodies inside the eye bring forth a multitude of interesting considerations. Those that must not be allowed to stay in are steel, iron, copper, zinc or any other corroding metal. Glass or wood is sometimes kept within the eye without great irritation. I have seen some foreign bodies lodged in the lens, causing of course a traumatic cataract, but not requiring immediate removal, as the lens metabolism is so slow that the eye as a whole is not affected by chemical action of the foreign body.

A word here about X-ray localization. It should be immediately done in every case. If the report states that the object is a number of mm. within the eyeball, one need not doubt the matter. If it is a question, however, of only a mm. or two in or out, it must not be forgotten that taking the refraction into consideration is here a useful point. If the other eye be myopic or a long eye, the chances are that the afflicted eye is approximately of the same condition; if the sound eye be hypermetropic or a short eye, the same conclusion is probably true; the measurement is made for an eye



of approximately 24 mm. in length. It is of importance to realize that if this particular eye is say one of 21 mm. in length or 31 mm. in length depending on how hypermetropic or how myopic it is, it will in one case militate against, in the other favor, the foreign body being in or outside of the eye.

It might, I think, be safely laid down that enucleation is indicated when a foreign body is within the eye, and a frank purulent endophthalmitis has set in. An attempt to preserve the eyeball is here of not much value. At the best, such an eye will shrivel to an unsightly stump and become the object of a period of long treatment and be of no service eventually. Enucleation should be decided on promptly in order to forestall a frank panophthalmitis which if once developed will cause long and tedious hospital stay and treatment.

I have had some interesting experiences with ocular paralysis due to trauma to the orbit. Four of the six have been abducens paralysis, from blows against the temporal orbital margin and temple. Unless the paralysis is complete—that is, if there be a bit of movement left in the direction of the paralyzed muscle—the chances for a quite remarkable return of function within four to six months are very good. One should be very slow about operative proceedings until after a lapse of from four to six months. Another point; diplopia of small amount in the extreme limits of movement of the eyeball, for instance only when looking to the extreme right, or left or up as a result of injuries has very little inconvenience for the patient and should not be taken as a loss to him demanding marked compensation. In the first place, most of the cases get very much accustomed to such diplopia in time; second, it is very seldom bothersome, as compensatory movements of the head are automatically employed to rectify the diplopia; in addition, objects far to the right or left are usually looked at by turning one's head and eyes in that direction, not the eyes alone.

As in all other injuries involving compensation, hysteria and simulation are met with more often than in ordinary practice. I have seen one typical hysterical field of vision following a slight corneal injury with a bit of coal dust, and one hysterical amblyopia lasting three days in a boy of fourteen, whose injury was a broken radius. Another hysteric persisted in an obstinate blepharospasm for months after a trivial injury. A cure for these cases is as many and varied as are the manifestations of hysteria and I will not go into them.

The simulation of blindness or partial blindness is sometimes very easily proved, but there are cases in which justice is not done to the insurance company unless the individual is put in a hospital and observed there under varying conditions, and when he is not aware of observation. In one such case claiming loss of three-fourths of vision whom I saw with Dr. Schaller, it could not be proved that the man saw better than this until he was detected picking off, with great precision and promptness, a fly purposely placed on his food.

## State Society Notes

### IMPORTANT NOTICE—TO CONTRIBUTING MEMBERS OF THE INDEMNITY DEFENSE FUND.

Notes are now becoming due.  
Do not let your membership lapse.  
Each member will be informed ten days in advance of the due date of his note.

Copies of the Medical Defense Rules will be mailed direct to each member of the State Society instead of being enclosed in the Journal as previously announced. Anyone not receiving the Rules within a week after receiving his Journal should communicate immediately with the State Secretary. These Rules are for the use of members *only*, and I again call your attention to the importance of not discussing them with any but a fellow member.

Henceforth all dues paid to the State Society through the County will be receipted to the individual by the State Secretary as well as the County Secretary. These receipts should be carefully preserved and may be used as evidence of membership in the Medical Society of the State of California.

SAXTON POPE, Secretary.

### OFFICERS RESERVE CORPS AND PENSIONS.

The following letter has been written to the Secretary of War, the Council of National Defense, the Surgeon-General of the U. S. Army, the Secretary and Chairman of the Senate, our two California Senators and eleven Congressmen:

"In the interest of the members of the Medical Society of the State of California, the Council of that organization wishes to know:

"What is the present status of a civilian physician serving in the Medical Section of the Officers Reserve Corps, so far as a pension is concerned?

"It is our understanding that no pension will be provided for the family of a member of this Corps should he lose his life in the service of his country.

"If this be the case, it certainly seems an injustice to the physician who gives up his life work and voluntarily assumes the duties and risks of military service.

"If you can enlighten us on this subject, or suggest any remedy, we will be very glad to hear from you.

"Signed: SAXTON POPE,  
"Secretary."

### MINUTES OF THE MEETING OF THE PUBLICATION COMMITTEE,

Held May 21, 1917, in the Library of the San Francisco County Medical Society.

Present: Grosse, Reed, Tucker and Hyman.

The following rulings for the guidance of the Committee were passed on motion of Grosse, seconded by Tucker:

1. Original articles for publication in the Journal may be accepted by the Editor.

2. No original article may be rejected unless so decided by at least two members of the Publication Committee, or by at least two specialists, selected by the Editor, in the line of the contents of the paper. The author of any rejected paper may

appeal to the Publication Committee, whose decision is final.

3. No advertisement for any article or institution not approved by the A. M. A. will be accepted.

4. There shall be strict adherence to the advertising rates established by the Finance Committee of the Council. No discounts are to be allowed except to advertising agencies who shall procure copy.

For the information of the committee it was stated that the Council has granted to the committee the same rights of rejection of papers read at the meetings of the society as those independently submitted.

The committee was informed that the advertisement of the Hatteroth Surgical House was dropped for offering commissions to physicians after having been warned not to do so.

It was moved by Grosse, seconded by Tucker, and carried, that the editor make a distinct effort to have all papers read at the meetings of the society submitted to the Journal, and to call especial attention to Article X, Sec. 1, of the By-Laws, which reads: "All papers read before the society or any of its sections shall become its property. Each paper shall be deposited with the secretary when read."

The editor was instructed to communicate with the chairman of the Committee on Scientific Program, and call his attention to this section, to suggest that it be printed in the Official Program, and called to the attention of readers of papers at the time of allotment on the program, and to secure such other cooperation as is advisable.

Chairman instructed to invite Dr. Bering, chairman of the Advertising Committee, to next meeting, for purposes of discussion and cooperation.

Next meeting to be held in same place on Monday, May 28, at 5 p. m.

Meeting adjourned.

## OBITUARY.

### J. C. Hearne, A. M., M. D.

Joseph Carter Hearne, A. M., M. D. Born Versailles, Ky. Graduated State University at Columbia, Mo., receiving A. M. degree with high honors, 1870. Jefferson Medical College, Philadelphia, Pa., 1872. Office Student Prof. S. D. Gross, 1871-1872. Second assistant in clinics under Prof. Gross and Prof. Joseph Pancoast, 1871-1872. Resident physician Philadelphia Hospital (Old Blockley) for three years. Chief surgeon Hannibal & St. Joseph Railway, 1881-1891. Secretary Missouri State Board of Health, 1883. One of the founders of Wabash Association Railroad Surgeons, it being the first association of railroad surgeons organized in the world, out of which grew the National Association of Railroad Surgeons in 1890 at Buffalo, N. Y., of which he was vice-president. District Surgeon Santa Fe Railroad Company since 1892. Member National and Pacific Association of Railway Surgeons. Member American Medical and Public Health Associations. Member of Medical Society of the State of California. Member of San Diego County Medical Society. Ex-president and ex-vice-president San Diego County Medical Society. Organized, owned and managed Hearne Surgical Hospital and Hearne Training School for Nurses in 1906. Chief surgeon of various corporations and railways of San Diego, Cal.

Died at his home, San Diego, Cal., May 9, 1917, aged 66.

## Society Reports

### CONTRA COSTA COUNTY.

The Contra Costa County Medical Society met in regular monthly meeting at the residence of Dr. C. R. Blake, Saturday night, May 26, which was the best attended meeting we have ever had, and the following program was listened to with unusual interest.

Dr. Leo Leonidas Stanley, Surgeon for San Quentin Prison, Cal., read a most interesting paper on Spinal Anaesthesia, which was discussed by the members present and also by Dr. Thomas W. Huntington. Dr. Stanley had used Spinal Anaesthesia in 500 consecutive cases without any untoward symptoms or bad results.

Dr. Thomas W. Huntington of San Francisco talked to us on the subject of Psychology, as pertaining to the present world crisis. He gave us very valuable information regarding the duties, responsibilities and opportunities in the present war.

At the conclusion Mrs. C. R. Blake served an elaborate banquet, for which she was given a hearty vote of thanks. Those present were:

Drs. Carter, H. N. Belgium, M. Deininger-Keser, P. C. Campbell, W. W. Frazer, H. L. Carpenter, Hall Vestal, J. T. Breneman, Wm. Lucas, C. R. Blake, W. E. Cunningham, C. E. Camp, U. S. Abbott, Richmond; E. E. Johnson and F. F. Neff, Concord; J. H. Adams, Crockett; E. B. Fitzpatrick and J. L. Beard, Martinez; S. H. Marks, Pittsburg; C. R. Leech, Walnut Creek; J. W. Hammond, Byron; F. S. Cook, Brentwood; A. L. Morrill, Antioch; A. B. Diepenbrock, from the local camp of the United States army; L. L. Stanley, San Quentin; T. W. Huntington, San Francisco.

Drs. J. H. Adams of Crockett and A. L. Morrill of Antioch were received as members into the Society.

Dr. J. L. Beard of Martinez, formerly of Sierra County, and Dr. S. H. Marks of Pittsburg, formerly of Marion County, asked to be transferred to the Contra Costa County Medical Society.

U. S. ABBOTT, Secretary.

### KERN COUNTY MEDICAL SOCIETY.

The Kern County Medical Society met at the office of the City Health Officer on Friday, June 15, at 8:45 p. m., President F. J. Gundry in the chair.

It was regretted that Dr. Bunnell of San Francisco missed his train and was not able to be with us for the meeting of May 18, but we hope to have him meet with us later in the year.

We had with us as a guest, Dr. A. R. Moodie of Fellows, who made application for membership by transfer from San Mateo County, of which Society he was formerly Secretary, residing at Redwood City during his secretaryship.

Many communications were read and disposed of, among them Coverage, Medical Defense and Administration Regulations and Rules.

It was noted that Dr. E. A. D. Jones had established himself at Taft, and had been appointed City Health Officer; also, that Dr. Wm. B. Smith has hung out his shingle at Kernville.

Moved by A. I. Fraser, seconded by Earl Brown, that meeting adjourn until meeting of September 21, 1917, at 8:30 p. m.

C. A. MORRIS, Secretary.

### MENDOCINO COUNTY.

At the call of the president, Dr. Frank C. Piersol, a meeting was held at Ukiah on the 5th. This meeting was the most important since the reorganizing meeting on February 22, 1906. Drs. F. G. Gunn, Willets, Melvin John Rowe and Talmage, were elected to membership. Hereafter

meetings will be held every month and are to alternate between the coast and the valleys.

Present: Drs. F. C. Piersol, H. H. Wolfe, F. G. Gunn, S. L. Rea, L. C. Gregory, Geo. W. Stout and O. H. Beckman, members, and Dr. A. J. Atkins, San Francisco, visitor.

Dr. S. L. Rea, chairman, organized the Auxiliary Medical Defense Committee of Mendocino County, California.

The state chairman and others were expected. The magnificent banquet provided by the Ukiah fraternity started the proceedings. The partakers feel duly grateful. All the fraternity is tabled and I suppose fully prepared to back Uncle Sam to the limit.

The first regular monthly meeting was held at Greenwood (Elk) on Saturday, June the 9th, in the office of Dr. Carol L. Sweet at 8 p. m.

Members present: Drs. H. Peddicord, C. L. Sweet, H. O. Cleland, A. Huntley, L. C. Gregory and O. H. Beckman. The president, Dr. Frank C. Piersol, not being present our host, Dr. Carol Lincoln Sweet, occupied the chair.

1. Minutes of last meeting approved.
2. No unfinished business acted upon.
3. A letter read from the State Secretary, in Re to Indemnity Fund and Medical Defense Rules, with enclosures.
  - (a) "Coverage Rules." Inspected.
  - (b) "Administration Regulations." Inspected.
  - (c) Defense Rules read and discussed.
4. Next a motion was carried to disregard all back dues prior to 1917.
5. A circular letter from the State Secretary, dated May 24th:

#### To All Industrial Accident Insurance Companies: Gentlemen:

The following Resolution was adopted by the House of Delegates at the recent meeting of the Medical Society of the State of California, held at Coronado, California, April 17th, 1917:

"Whereas, Certain Insurance Companies have employed physicians on a salary basis, to care for as much of their surgical work as possible, at a price inadequate to cover reasonable fees for labor performed, and

"Whereas, It was the distinct understanding between the Industrial Accident Commission, the State Fund and the Adjusters' Association and the Medical Society of the State of California, that such practice would not be adopted; be it

"Resolved, That the Industrial Accident Commission, the State Compensation Fund and the Adjusters' Association be reminded of this agreement and requested to desist from this practice, and that such members participating in such a contract be disciplined by their County Society, and that the names of the Insurance Companies, which are parties to such a contract, be made known to the members of this Society by its officers. It was further

"Resolved, That the Secretary be instructed to send a copy of this resolution to all Industrial Insurance Companies."

OSWALD H. BECKMAN, Secretary.

#### PROCEEDINGS OF THE SAN FRANCISCO COUNTY MEDICAL SOCIETY.

During the months of April and May, 1917, the following meetings were held:

##### Tuesday, April 3—Section on Medicine.

1. Cutaneous Metastases in Lymphosarcoma; Demonstration of Patient. Harry E. Alderson.
2. Some Observations on the Phenolsulphophthalein Test; Its Value as an Aid in Classifying Kidney Lesions. R. B. Tupper.
3. Lymphocytosis: A Clinical Study. J. Marion Read.
4. Complement Fixation in Tuberculosis. B. Jablons.

##### Tuesday, April 10—General Meeting.

(This meeting was held at the San Francisco Commercial Club, following a dinner given to Dr. Robert C. Coffey of Portland, Oregon, and Dr. Hugh P. Greeley of Waukesha, Wisconsin.)

1. Gastric and Duodenal Ulcers. Robert C. Coffey.
2. Diabetes Mellitus: Broader Aspects of Treatment and End Results. Hugh P. Greeley.

##### Tuesday, May 8—General Meeting.

1. The Isolation, Properties and Actions of Tethelin, the Active Constituent of the Anterior Lobe of the Pituitary Body. T. Brailsford Robertson, Berkeley.
2. Observations on Recent Cases of Variola. A. A. O'Neill.

##### Tuesday, May 15—Section on Surgery.

1. Intranasal Plastics (Illustrated by lantern slides). Grant Selfridge.
2. Intra-abdominal Hemorrhage Other than from Ectopic Pregnancy; Report of Cases. L. H. Hoffman.
3. Some Remote Effects of Brain Injury. Harold W. Wright.

##### Tuesday, May 22—Section on Eye, Ear, Nose and Throat.

Conditions in Rumania and Russia. Professor Doctor Stanculeanu, University of Bucharest.

##### Tuesday, May 29—Section on Urology.

1. Infections of the Upper Urinary Tract in Women. William E. Stevens.
2. Irritability of the Female Bladder Due to Prolapse of the Posterior Wall of the Urethra. (Illustrated by lantern slides.) Dr. L. C. Jacobs.
3. An Interesting Case of Pyuria. (Illustrated by X-rays.) G. W. Hartman.

No meetings will be held during June and July.

#### SAN JOAQUIN COUNTY.

The regular monthly meeting of the San Joaquin County Medical Society was held at the rooms of the Chamber of Commerce on Friday evening, May 25. The meeting was called to order by First Vice-President McGurk and those present were: Drs. E. B. Todd, N. E. Williamson, R. B. Knight, Margaret Smyth, F. Conzelmann, J. D. Dameron, B. F. Walker, F. P. Clark, S. E. Latta, Mary Taylor, W. F. Priestly, H. Smythe, C. F. English, R. T. McGurk and D. R. Powell with Dr. McCloskey of Stockton, Dr. E. W. Cleary of San Francisco and Dr. Henry Smith Williams of New York City as guests.

Following a short business session, the chairman introduced Dr. Henry Smith Williams who told of the experiences in the Beebe-Williams clinics in New York with non-specific vegetable protein compounds called Proteals. According to clinical case reports, excellent results have been obtained in the treatment of carcinoma, tuberculosis, arthritis and other conditions. Following his paper, there was quite a lively discussion and the doctor answered numerous questions.

The chairman called the members' attention to the great loss which the society had suffered in the death of one of its oldest and most respected and highly esteemed members, Dr. J. D. Young. After accepting the invitation of the Lodi physicians to hold the June meeting of the society in Lodi, it was moved and carried that the society adjourn in respect to the memory of Dr. J. D. Young.

DEWEY R. POWELL, Secretary.

#### SANTA BARBARA COUNTY.

The regular monthly meeting of the Santa Barbara County Medical Society was this month a joint meeting with Ventura County. The meeting



was well attended by both units and thoroughly enjoyed by all.

The meeting was held at the Arlington Hotel, Monday evening, May 14, 1917. After a banquet the guest of honor, Dr. Dudley Fulton of Los Angeles, delivered a paper before the society on "Diagnosis and Treatment of Renal Insufficiency." All members present took part in the discussion, and the meeting and paper were pronounced the best of the year.

R. M. CLARKE, Secretary.

#### TULARE COUNTY.

At the regular monthly meeting of the Tulare County Medical Society held in Visalia on June 3 Dr. Thomas W. Huntington of San Francisco addressed the Society on "The Psychology of War." The address was of great interest and a large attendance was present.

The following were named as "The Auxiliary Defense Committee of Tulare County, California" and as the "Committee on Aid to Military Colleagues": Dr. C. A. Tillotson, Dinuba; Dr. J. Tracy Melvin, Porterville; Dr. A. W. Preston, Visalia.

The Society extended a very sincere vote of thanks to Dr. Huntington for his visit and address and voted to enroll in a body in the Medical Reserve Corps.

ADDISON W. PRESTON, Secretary.

#### REPORT OF THE TREASURER OF THE COMMITTEE OF AMERICAN PHYSICIANS FOR AID OF THE BELGIAN PROFESSION FOR THE QUARTER ENDING MAY 31, 1917.

No contributions.

Previously reported receipts....	\$7,961.26	
Total Receipts.....		\$7,961.26
Previously reported disbursements:		
1625 Standard boxes of food		
@ \$2.20 .....	\$3,575.00	
1274 Standard boxes of food		
@ \$2.30 .....	2,930.20	
353 Standard boxes of food		
@ \$2.28 .....	804.84	
Total Disbursements .....		\$7,310.04
Balance .....		\$651.22

F. F. SIMPSON, M. D., Treasurer,  
7048 Jenkins Arcade Building,  
Pittsburgh, Pa.

### Book Reviews

#### Diseases of the Stomach, Intestines and Pancreas.

By Robert Coleman Kemp, M. D., Professor of Gastro-intestinal Diseases at the Fordham University Medical School. Third edition, revised and enlarged. Octavo of 1096 pages, with 438 illustrations. Philadelphia and London: W. B. Saunders Company, 1917. Cloth, \$7.00 net; Half Morocco, \$8.50 net.

In order that an adequate review of this encyclopedic work can be written, more space than can be afforded in these days of the high cost of paper would be required. In the field indicated by the title, a most complete and painstaking textbook has been assembled, making use of the whole literature, American and foreign.

This third, revised edition is a well merited proof of the wide popularity of Kemp's success in placing before the medical world a book that so thoroughly fills its place; this being the seventh reprint of the work in its original and revised forms.

Among the sections that have been added to the

work or amplified, are radio-diagnosis, Lane's kinks, Jackson's membrane, duodenal dilatation, ileo-cecal valve incompetency, subinfection, protein absorption, focal infection, as a source of gastro-intestinal disease and colon infection in other than the gastro-intestinal tract, visceral displacements, and diverticulitis. In addition the author has come out with decisive statements on the futility of treating surgical conditions except by the earliest possible application of surgery, including early exploratory operation in suspected malignancy and early excision of gastric ulcer regarded as a precancerous condition.

Among the standard reference works that grace the doctor's book shelves, a place should surely be found for Kemp's most helpful and well balanced text-book.

G. H. T.

#### The Starvation Treatment of Diabetes with a series of graduated diets. By L. W. Hill and R. S. Eckman. With an introduction by R. C. Cabot. Third edition. Boston: W. M. Leonard, Publisher. 1917. Price \$1.25.

This, the third edition in two years, is a strong testimonial of this little book's popularity. Quite a little new matter has been added and some of the diet tables have been changed, particularly along the lines of reduction of fat. This work can be highly recommended to all physicians interested in the treatment of diabetes and to the diabetic patient of average intelligence because of its practical teachings and ease of application.

R. B.

#### A Practical Treatise on Fractures and Dislocations.

By Lewis A. Stimson. Eighth edition, revised and enlarged with 475 illustrations and 39 plates in monotype. New York and Philadelphia: Lea & Febiger. 1917. Price, \$6.00.

It is a pleasure to greet this old friend and standby in a new edition. We know of no book on fractures that can compare with it for completeness and careful elaboration; it has due regard for the new, but does not neglect the valuable data contained in the works of older writers. Stimson has brought it up like a favorite child; each successive edition shows the effects of his work and thought and nursing.

The new eighth edition contains considerable material on gunshot wounds, gathered in French military hospitals, and additions to the chapter on dislocations of the shoulder in infancy.

In his preface the author says: "I hope that the book in its formulation of principles and indication of choice of methods will be a safe guide for the practitioner and student." It is. L. E.

#### Surgical Clinics of Chicago. April, 1917. Volume I, Number 2. With 99 illustrations. Published bi-monthly by W. B. Saunders Company, Philadelphia and London. Price per year, \$10.00.

##### Contents.

- Clinic of Dr. A. J. Ochsner:  
Carcinoma of the breast. Intra-abdominal strangulated inguinal hernia.
- Clinic of Dr. N. M. Percy:  
Pernicious anemia; splenectomy; blood transfusion.
- Clinic of Dr. John Ridlon:  
Congenital dislocation of the hip.
- Clinic of Dr. A. D. Bevan:  
Surgical lesions of the colon.
- Clinic of Dr. E. W. Andrews:  
Divided bloodvessels as aids to accurate wound closure.
- Clinic of Dr. A. E. Halstead:  
Three cases illustrating points in the surgical pathology of the region of the embryonic branchial clefts. (1) Ranula; (2) Cyst of the

- ductus thyroglossus; (3) Retromaxillary tumor probably of branchial origin.
- Clinic of Dr. Malcolm L. Harris:  
Laryngectomy under nerve blocking.
- Clinic of Dr. Carl Beck:  
Plastic operations on the upper extremity.
- Clinic of Dr. A. B. Kanavel:  
Bullets located between the atlas and the base of the skull; technic of removal through mouth.
- Clinic of Dr. D. N. Eisendrath:  
Inguinosuperficial hernia associated with non-descent of the testis.
- Clinic of Dr. C. B. Davis:  
Suppurative pericarditis.
- Clinic of Dr. D. B. Phemister:  
Chronic lung abscess with pulmonary hypertrophic osteoarthropathy.
- Clinic of Dr. Louis A. Greensfelder:  
Demonstration and reduction of an old subcoracoid dislocation of the shoulder.
- Clinic of Dr. Hugh McKenna:  
Demonstration of cases illustrating important aspects of the indications, technic and results of bone transplantation and arthroplasty. (1) Double hallux valgus. (2) Fracture of the femur treated by means of an autotransplant. (3) Tuberculosis of the first phalanx of the second finger. (Demonstration of previously operated cases.)
- Clinic of Dr. F. G. Dyas:  
Open treatment of infected wounds.

**Traumatic Surgery.** By John J. Moorhead, M. D., F. A. C. S., Adjunct Professor of Surgery in the New York Post-Graduate School and Hospital. Octavo volume of 760 pages with 522 original illustrations. Philadelphia and London: W. B. Saunders Company. 1917. Cloth, \$6.50 net; Half Morocco, \$8.00 net.

The author is chief surgeon to the Interborough Rapid Transit and New York Railways; his book is evidence enough of his experience. The book is eminently practical; symptomatology and treatment are well discussed, briefly, clearly and with a foundation of personal observation.

The chapters on fractures and dislocations will be especially valuable to those engaged in industrial accident work, particularly the notes on results, length of disability and first aid treatment. A few remarks on late complications might be added with benefit. The periods of partial and total disability given by the author are short, a good deal shorter than they would be in the hands of a general practitioner, and even of a trained surgeon, unless he has to do with an uncommonly willing and energetic class of insurance patients. Some observations are at variance with the experience of others: e. g., that fibrous union is frequent in fractures of the clavicle, and that non-union in fractures of the forearm is unusual; that fractures of the costal cartilages are rare, and that restoration after dislocation of the elbow is complete.

The chapter on injuries of the spine contains a complete discussion of cord complications, but we would appreciate a little more information on the subject of sprained back, sacralized lumbar vertebra and similar obscure conditions. The author's attitude towards cord injuries is more hopeful than that of most men. Fig. 462 is misdrawn; it represents an intradural hemorrhage, but not a hemyelomyelia.

The chapters on trauma and miscarriage, trauma and hernia and uterine prolapse and the chapter on traumatic neuroses will be welcome to many a doctor who is put face to face with these questions in his insurance practice.

The book can be warmly recommended as a competent and helpful guide to traumatic and insurance surgery. Its rapid reprinting attests its certain popularity.

L. E.

**Localisation et Extraction des Projectiles.** By L. Ombredanne and R. Ledoux-Lebard. Paper. Pp. 350. xiv, illustrated. Paris: Masson & Cie. 1917.

This little volume is one of a collection of monographs on military medicine. It contains four introductory chapters on the Roentgen ray in general, and follows these by eleven others that treat of the search and localization of projectiles and of their extraction. It is written in a clear and practical way, and explains the by no means simple radiographic methods that have arisen from McKenzie Davidson's procedure, giving enough of their mathematical theory to make them fully intelligible. Fluoroscopic methods, which have proven of more practical value than the radiographic ones, are also fully explained and illustrated. The book will be a useful aid to radiographers and military surgeons.

L. E.

**Constipation, Obstipation and Intestinal Stasis.** By Samuel Goodwin Gant, M. D., LL. D., Professor of Diseases of the Colon, Sigmoid Flexure, Rectum and Anus in the New York Post-Graduate Medical School and Hospital. Second edition enlarged. Octavo of 584 pages, with 258 illustrations. Philadelphia and London: W. B. Saunders Company. 1916. Cloth, \$6.00 net; Half Morocco, \$7.50 net.

This book contains a great deal of information upon the subject, and undoubtedly has been of service to the medical profession or it would not have been reprinted twice and now re-edited. There are a number of objections, however, which seem to be common to the average text-book and which ought not to be passed over silently in a review. Probably the worst fault of text-book writers is the tendency to make loose and unwarranted statements. For instance, on page 71, what experimental evidence has Dr. Gant for the statement that the daily use of cleansing enemas is very injurious, "owing to the fact that it leads to enteroptosis, angulation, dilatation, atony of the gut and an obtunded condition of the colon"? Similar statements are made on page 209. We doubt if he would defend such a statement if it were called to his attention. He doesn't object, however, to the doctor's giving the irrigations at so much per visit. On page 267 and elsewhere he talks of "torpidity" of the liver, whatever that is. He thinks it can be corrected by vibratory massage over the liver. He shares also in the common delusion that mercury is a chologogue (p. 306). In speaking of massage, on page 271 he says: "It dislodges and pushes down scybala and large putty-like fecal accumulations lodged in any part of the colon. . . . it assists in driving the contents of the small bowel into the cecum . . . and helps to force solid feces out of the sigmoid flexure. It breaks up fecal masses and assists them to pass points of obstruction." Dr. Gant may have proof for these statements, but we doubt it very much. While studying people under the radioscope, we have tried repeatedly to move fecal masses a little way along the colon, and have always failed. If this is true for a thin patient with the colon visible under our hands, what chance has the masseur, rubbing where he thinks the colon should lie? Anyone who will kill and open a rabbit and try to move the scybala along the colon will be surprised to see how difficult it is, on account of the firm grasp of the bowel wall. Although bowel movements may be obtained after massage, our experience with the X-ray makes us feel sure that it is not due to any direct forwarding of the intestinal contents.

On page 230 and elsewhere he describes high and low enemas, although on page 239 he admits that the successful introduction of the long colonic tube under all circumstances requires a great deal of skill and ingenuity. He describes how it can be done, but we are quite sure that he would have

omitted this section of his book if he had ever checked up his efforts in this direction with the X-ray. Anyone who has passed a sigmoidoscope knows how impossible it would be to pass a soft tube into the sigmoid. We should expect a rectal specialist to be one of the first to point out the uselessness of this distinction between high and low enemas. If he has watched any barium enemas being given he must know that they flow on into the cecum when the nozzle is inserted just beyond the anal sphincter.

Dr. Gant inclines to the mechanical theories of stasis. For instance, on page 95, he states his belief that the normal flexures of the colon serve to retain the feces in different segments. Naturally he marvels (p. 97) that with all the anatomic obstructions to the free passage of feces in the colon, sigmoid and rectum, one can still have unaided evacuations. In common with other writers, he seems to forget that there is such a thing as a colonic musculature. Figures 200 and 256 depict as serious operable kinks what we believe most radiologists would call a normal, harmless variation of the colon. The author holds these bends responsible for the constipation, and yet, in Figure 216, we see him making a worse kink, and a mess of adhesions in order to anchor a dropped sigmoid flexure.

He is too much impressed with the seriousness of enteroptosis. He thinks these patients always suffer from constipation, extreme nervousness, frontal headaches, loss of appetite, malnutrition, emaciation, anemia, tympanites, disturbed circulation, etc. (p. 184). He plainly has not been following recent work, which has shown that enteroptosis is more or less marked in a large proportion of women, sixty per cent. of whom may have no symptoms from it.

There is a great deal on constipation, some of which is good and shows evidence of the author's observation of his own patients. Other parts are unsound, show a lack of thought and a servile following of other writers on the subject. For instance, on page 129, he says: "No one has yet been able to give a satisfactory explanation of why it is that one constipated individual will suffer from most distressing symptoms . . . because of retained feces . . . while another person suffers no inconvenience and appears to be pretty well, although he has not had an evacuation for several days, weeks or months." He thinks it may be due to an idiosyncrasy of the patient—that the costiveness is only one factor, the other being the individual's constitution and especially the irritability of his nervous system. He has seen cases in which retention of feces for from six weeks to four months caused but slight disturbance in the patient. On page 133 he says: "Unfortunately, many individuals in some unaccountable way convince themselves that their health and happiness is dependent entirely upon a daily evacuation, which, according to their standard, should take place at a set time and which should not vary either in amount, consistence or shape. Such persons, especially when they are of a nervous temperament, immediately begin to worry if the daily evacuation is delayed, or is smaller, or is harder than they think it should be; and on the other hand they are as happy as a child with a new toy when the stools come in the regular way and are of the proper proportions. Persons of wealth and leisure who are constipated, develop nervous phenomena more frequently than working people similarly afflicted, simply because they have an abundance of time to dwell upon their real or supposed ills. I have frequently treated highly educated and refined persons of both sexes, who, when they did not have their morning evacuation would worry until they were all in a tremble and totally unfit to keep their business or social engagements."

After giving this splendid description of the

typical neurotic constipated individual, he relates some experiences to demonstrate the pronounced psychological factor which is so often present. He tells (p. 212) of the wonders "accomplished in the treatment of constipation by encouraging words, congratulating the patient from day to day upon his improved looks and by suggesting that if he will do this and that, improvement will be still more rapid." "I have on many occasions administered colored water, bread pills or other non-laxative agents to patients suffering from constipation, at the same time conveying to them the idea that these were reliable cathartics which would bring about an evacuation next morning; many times my prophecy came true. Often I have administered to patients who had not had a movement in twenty-four hours, a very light electric, mechanical, vibratory or massage treatment, which could not possibly excite peristaltic action, and have coupled this with the suggestion that if they would immediately rise from the table and go to the toilet before the effects of the application worked off, they would have an evacuation, and not infrequently they were successful."

After this clear recognition of the psychologic nature of constipation, it is surprising and disappointing later to find him apparently joining with his patients in their fears, in their centering of attention on their colons, and in their dread of the awful consequences of auto-intoxication. In one place he is apparently hesitating a bit whether to accept the experience of his own clientele or the writings of Lane and his school. He says (p. 133) auto-intoxication is a frequent manifestation of chronic constipation "if the reported experiences of many clinicians are to be relied upon." (Black ours.) On page 563 he has apparently forgotten this reserve, for we find him listing pyorrhoëa, endocarditis, gout, loss of hair, endometritis, thyroid disease, duodenal ulcer, visceroptosis and even syphilis as complications and end results of stasis.

In spite of his experience with bread pills, he describes and warmly endorses a number of therapeutic measures which it has always seemed to us can only be vehicles for psychotherapy. On the whole he seems to think they really work, although on page 213 he expresses some doubt. He says: "If the patient has an exaggerated idea of the curative powers of electricity, mechanical vibration, massage, or water drinking, give it to him and permit him to believe that it will benefit him greatly, but at the same time combine this with other therapeutic measures which are more effective while not so important in the eyes of the patient." He advises the physician to fit up his office with a complete electrical outfit, massage rollers and balls, vibratory and suction pumps, therapeutic lamps, irrigators, etc., to carry out treatment on the constipated. We believe this is dangerous advice to the young doctor. At first he may realize that this is mainly psychotherapy, that it is a harmless way of keeping the patient busy, etc., but later he is likely to come under the spell of his own buncombe. It is so easy that he is soon using it on everyone, and before long he doesn't even attempt to make a diagnosis. To be sure, the neurotic constipated love this sort of thing. They will swear by the physician who can find most kinks in their bowels, who will share with them their fears of auto-intoxication and who will devise the strangest schemes for purgation. It would seem to us, however, that such service to the patient is not for his greatest good; it is neither kind nor fair. Permanent and true cures can only be wrought by training the constipated (if possible) to look upon his colonic functions as sensibly and as unconcerned as does the average sane man.

We are glad to see he recognizes the serious results which often follow the prescription of a



rough diet. On page 214, he says the change should be gradual in order to avoid attacks of indigestion, colic and flatulence. We believe even such precautions will rarely be of avail. He is one of the few writers whom we have found who realizes that in many instances the benefits derived from rough diet **"are offset by the gastrointestinal disturbances which follow in their wake."** (Black ours.) As usual with writers on constipation, he doesn't explain why they give an irritant rough diet in spastic constipation. On page 335 he says: "Every means should be taken to prevent and relieve muscular contractions of the bowel" in the spastic type; the treatment should be radically different from that in atonic constipation. One would think that if this difference is so important, one of the best chapters in the book should be on the differential diagnosis between the two types. So far we have been unable to find anything on the subject. The author seems to be following a meaningless classification as servilely and as thoughtlessly as he accepts von Noorden's rough diet for constipation with mucous colitis, although Gant says (p. 218) that this is always of the spastic type. Consistency is a virtue practically unknown amongst writers on constipation.

He complains (p. 462) that enteroptosis is sometimes difficult to remove—apparently not recognizing that it is often as fixed as the shape of the patient's head or foot. Although, on page 471, he admits that all the enteroptotic symptoms may disappear under forced feeding and rest, in other chapters he describes a number of operations for anchoring the organs and gives the impression that they ought to be used much more than they are (p. 476). Surgeons have a pernicious habit of writing up their favorite gastro-, colo-, nephro- and ceco-pexies in glowing terms, making the reader feel that it is a crime not to use them; and then, in an inconspicuous postscript, adding that such operations are to be reserved until everything else has failed; that they are applicable to but a few unusual cases and that although the organ may stay put, the symptoms generally return after a few months. We believe that anyone reading Gant's book would feel that he ought to send for his old patients to have their abdomens remodeled. If he is fortunate enough, however, to turn to the last page of the book, he will find the following afterthought: **"The author would urge surgical intervention as a last resort in cases of constipation . . . with intestinal auto-intoxication, and not simply because a radiograph seems to show a mechanical intestinal defect."** (Black ours.) "Largely through the teachings of Lane, many American surgeons are resorting to surgery much more frequently than is necessary and are performing dangerous operations that often leave serious permanent sequelae (without benefiting their patients), for unimportant obstructing lesions causing stasis that can be relieved by the less serious and more conservative procedures elsewhere described. The author believes **less colon snatching and short-circuiting** should be done because the **former** often ends fatally and the **latter** frequently leaves the patient in a worse condition than before the operation." We rejoice to read these things, but they should have been set before the reader at the beginning of every chapter on operative procedures.

Our criticism, then, is that although the book may be very useful in describing every conceivable procedure directed against constipation, many chapters show so little evidence of clinical experience that one would think they were written by a compiler.

W. C. A.

#### STATE BOARD OF HEALTH, JUNE MEETING.

At the meeting of the State Board of Health in Sacramento on June 2, 1917, the following mem-

bers were present: Drs. George E. Ebricht, President; Fred F. Gundrum, Vice-President; Edward F. Glaser, Adelaide Brown, Robert A. Peers, and Wilbur A. Sawyer, Secretary.

Five inspectors employed by the Supervisors of Siskiyou County in enforcing the State rabies quarantine were deputized as inspectors of the State Board of Health without salary.

Certificates as Registered Nurses were granted to 174 nurses who had passed the examination held by the Bureau of Registration of Nurses on April 18 to 19. Thirty-eight candidates had failed to receive the required grade. Two nurses were given certificates through reciprocity.

A permit was given to the Manor Water Company to supply water to Fairfax Manor, and a temporary permit was given to the Lake Hemet Water Company to furnish water to Hemet. Sewage disposal permits were granted to the Moraga Water Company at Moraga, and to the Folsom Sanitary District at Folsom.

The following resolution was adopted:

"Resolved, That sacks which have been used for the collection of soiled laundry shall not be used for the delivery of clean laundry unless such sacks have been thoroughly washed before the clean clothes have been placed therein."

Dr. Frank L. Kelley was promoted from the position of Assistant Epidemiologist to that of Epidemiologist.

The resignation of Dr. James G. Cumming, Director of the Bureau of Communicable Diseases, was accepted with the proviso that it take effect on August 1, as requested by Dr. Cumming, and the following resolution was adopted:

"Resolved, That the California State Board of Health accepts with regret the resignation of Dr. James G. Cumming as Director of the Bureau of Communicable Diseases in order that Dr. Cumming may take up his duties as Captain in the Medical Reserve Corps of the United States Army; and in accepting the resignation of Dr. Cumming the Board wishes to express its gratification over the increase in the work done by the Bureau while under Dr. Cumming's administration and over the efficiency with which that work was done."

It was decided that the vacancy created by the resignation of Dr. Cumming and also six new positions as State District Health Officer be filled through Civil Service, the examinations to be held on June 30 throughout the United States by the United States Public Health Service, acting for the State Civil Service Commission. Examinations for the positions of Epidemiologist in the Bureau of Communicable Diseases and Bacteriologist of the Southern Division Laboratory of the same Bureau are to be held by the Civil Service Commission throughout California on the same date.

On the recommendation of the Director of the Bureau of Tuberculosis the Marin County Tuberculosis Hospital was declared eligible for the State tuberculosis subsidy.

The Secretary was instructed to arrange, if possible, through the State Bureau of Registration under the Draft Act, for the reporting of all cases of tuberculosis discovered during the physical examinations, and for the subsequent examination, when desired, of the tuberculosis patients by experts, and their proper supervision and care as far as possible; and also for the reporting and, if requested, the correction of correctable defects in men who would otherwise be acceptable in the army.

A motion was carried that the Board recommend to the proper State authorities the setting aside from the emergency defense fund, or such other moneys as may be available, the sum of one hundred thousand dollars for the establishment and maintenance by the State Board of Health, at suitable locations selected by the Board, of a

convalescent camp or camps for tuberculous persons rejected at time of enlistment or returned from the army.

Mr. Kemper B. Campbell, Attorney to the Board, announced that a decision favorable to the contentions of the Board had been handed down by the Second Appellate Court in the case of *Boss vs. Lewis*. This decision upheld the right of the State to compel the counties to pay the fees of local registrars of vital statistics.

The action of the Secretary in assigning the enforcement of the new plumbers' registration act to the Bureau of Sanitary Engineering was approved.

The Board approved the formation of a Division of Biology in the Bureau of Communicable Diseases which would be under the supervision of Professor Charles Kofoed of the University of California. Prof. Kofoed and Assistant Professor W. W. Cort were appointed Biologist and Associate Biologist without salary from the State Board of Health. The purpose of the new Division is to do protozoological and helminthological work for the State Board of Health in connection with war sanitation and to make investigations of flukes, worms, protozoa, and other human parasites, particularly intestinal parasites, throughout California.

The Board considered the salaries of the staff and made a number of changes, which will be effective July 1, 1917, and transacted other routine business.

As usual a large number of alleged violators of the pure foods and drugs acts were given hearings and action was taken by the Board in each case.

WILBUR A. SAWYER, Secretary.

#### THE STATE BOARD OF HEALTH MAY MEETING.

The State Board of Health held its regular monthly meeting in Sacramento on May 5, 1917. The following members were present: Drs. George E. Ebright, president; Fred F. Gundrum, Edward F. Glaser, Adelaide Brown and Robert A. Peers.

Consideration was given to the case of typhoid carrier near Bakersfield, who had been found, by investigation of the Bureau of Communicable Diseases, to be responsible for twelve cases of milk-borne typhoid fever in the previous twelve months. A resolution was passed forbidding the sale of milk until the carrier had been removed from the dairy.

The Board instructed its attorney to institute the proper legal proceedings to compel the supervisors of San Luis Obispo County to appoint a county health officer as required by law.

A physician was given a hearing who had failed to report a case of diphtheria and had allowed the patient to travel to another city. He plead ignorance of the true nature of the disease. A warning was given and action was deferred.

The Director of the Bureau of Tuberculosis was instructed to request the federal authorities to notify the proper local authorities of the names and addresses of all applicants for military service rejected on account of tuberculosis.

The following resolution was adopted and ordered sent to the mayors of all incorporated cities in California:

"Whereas, Every possible protection to health and physical welfare should be afforded those enlisting in the Federal service and the citizens of the state at large; and

"Whereas, Experience shows that unless restrained by public authority prostitutes gather in large numbers near army camps and spread venereal diseases among the soldiers; and

"Whereas, Said diseases are a serious factor in morbidity and reduced efficiency, and a menace to the public health; therefore be it

"Resolved, That the State Board of Health of California urge upon all mayors throughout the state that they demand from their health officers,

police departments, and other appropriate officials an active policy of protection of the enlisted men and of the civil community against this menace to the public health; and, be it further

"Resolved, That detailed reports be requested of said officials setting forth the recommendations made by them and the methods of 'preparedness' being enforced by them to meet this public health problem."

In accordance with the recommendation of the Director of the Bureau of Sanitary Engineering the Board issued a permit to the City of Rio Vista to supply water from wells to the City of Rio Vista.

A permit was issued to the City of Paso Robles to treat its sewage in an Imhoff tank and empty the effluent on a sand bank adjacent to the Salinas river.

Two nurses were given certificates as registered nurses.

The vacancy in the position of assistant engineer in the Bureau of Sanitary Engineering was filled by the appointment of Mr. Clyde F. Smith.

Many items of routine business were transacted.

Hearings were held in cases of alleged violations of the foods and drugs laws and appropriate actions were taken.

W. A. SAWYER, Secretary.

#### NEW MEMBERS.

Fox, Charles Marvin, San Diego.  
Smith, Virginia T., Calipatria.  
Congdon, Chas. E., Jamestown.  
Gould, Elisha T., Sonora.  
Wrigley, Geo. C., Sonora.  
Ermentrout, S. J., Elbridge.  
Klick, John J., Sutter Creek.  
Holliger, Charles Daniel, Stockton.  
Coleman, Barney Ellerton, Mokelumne Hill.  
Starbird, George A., Salinas.  
Saylin, Isaac, El Monte.  
Scholl, Agnes J., Los Angeles.  
Donnelly, Edward F., Napa.  
Ransom, Jack Kennedy, Newman.  
Hill, Earl W., Eureka.  
Hays, Wilfred B., Sonoma.  
Mize, Guy H., San Francisco.  
O'Donnell, Earl W., San Francisco.  
Reid, Eugene H., Tuolumne.  
Stratton, Daniel E., Chinese Camp.  
Duncan, Hiram B., San Francisco.  
Bullard, Margaret M., King City.  
McAulay, Martin, Monterey.  
Allen, R. E., Newcastle.  
Bernard, Joseph H., Truckee.  
Collins, W. F., Roanoke, Va.  
McDaniel, John L., Los Angeles.  
Nichols, R. C., Chino, Cal.  
Rinkenberger, F. W. —  
Wagner, A. F., Pasadena.  
Clark, Wm. S., Los Angeles.  
Singleton, Wm. T., Long Beach.  
Chase, Frank H., Los Angeles.  
Moore, Wm. Day, San Pedro.  
Fearon, Wm. M., Los Angeles.  
Kalb, George B., Monrovia.  
Gaylord, Chas. D., Monrovia.  
Trott, Leslie D., Los Angeles.  
Ross, A. B., Los Angeles.  
Fish, Joseph B., Los Angeles.  
Shattuck, Hobart P., Los Angeles.  
Carter, C. E., Los Angeles.  
McGuffin, Robert K., Imperial.  
Harley, Elmer, Seeley.  
Jackson, Louis H., Imperial.  
Ledyard, Cory C., San Francisco.  
Smith, Larz A., San Francisco.  
Adams, John Henry, Crockett.

#### DEATHS.

Alexander, George E., Hayward.  
Davis, Sylvester B., Hollywood.  
Young, Junius D., Stockton.